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第一卷第一冊

理學博士岡村金太郎著

ILLUSTRATIONS OF THE MARINE ALGÆ OF JAPAN.

Vol. I. No. 1.

BY

K. OKAMURA, *Rigakuhakushi.*

TOKYO.

1900.

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K. OKAMURA.
ALGÆ JAPONICÆ EXSICCATÆ.

FASCICULUS I.

- | | |
|---|--|
| 1. Nemalion pulvinatum Grun. | 26. Ptilota dentata Okam. |
| 2. Scinaia furcellata (Turn.) Bivona. | 27. Ceramium paniculatum Okam. |
| 3. Brachycladia australis Sond. | 28. Ceramium gracillimum Griff. et Harv. |
| 4. Gelidium divaricatum Martens. | 29. Gloiopeltis tenax (Turn.) J. Ag. |
| 5. Gelidium repens Okam. | 30. Grateloupia lancifolia (Harv.) Okam. |
| 6. Suhria Japonica Harv. | 31. Grateloupia acuminata Holmes. |
| 7. Acanthopeltis japonica Okam. | 32. Grateloupia filicina (Wulf.) Ag. |
| 8. Chondrus elatus Holmes. | 33. Polyopes Polyideoides Okam. |
| 9. Gigartina tenella Harv. | 34. Prionitis angusta Okam. |
| 10. Gymnogongrus flabelliformis Harv. | 35. Chondrococcus japonicus (Harv.) |
| 11. Callophyllis japonica Okam. | 36. Cystophyllum fusiforme Harv. |
| 12. Callophyllis (Microcoelia) Chilensis (J. Ag.) | 37. Pelvetia Babingtonii (Harv.) De Toni. |
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| 20. Laurencia dendroidea J. Ag. | 45. Letterstedtia Japonica Holmes. |
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| 24. Digenea simplex (Wulf.) Ag. | 49. Codium mamillosum Harv. |
| 25. Dasya scoparia Harv. | 50. Codium mucronatum J. Ag. |

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PREFACE.

It was indeed 1689 that, with Kämpfer's visit to this country, our algæ were for the first time subjected to the study of scientific world of Europe. Since this time, not a little number of our algæ have been brought away to Europe by several tourists and collectors, and such men as Harvey, Martens, Suringar, Kjellman, Hariot and de Toni may be mentioned among many others, who have studied our native algæ and identified them. In 1891, Hariot published his "*Liste des Algues Marines rapportées de Yokoska*," in which he mentions that 233 species were already known up to the date of his publication, and by his adding 21 new species, the total number becomes 254. In 1895, G. B. de Toni published his "*Phyceæ Japonicæ Novæ*," in which he enumerates 305 species, some of which were identified according to the specimens I sent him.

Since 1888, when I, as the first student on our marine algæ amongst us, began my study, more than 350 species were studied, not a few of which are new species and, I doubt not, may be more or less interesting to the algologists in abroad. Now the main object of publishing this work is both to promote this branch of science in this country and to make our marine algæ more familiar to those who are interested in this study as well as to the algologists of the world at large.

Here, I want to add a few words that we are not placed in very favourable condition of studying algæ by any means, especially from the lack of algological literature and reference specimens. For, as there is not yet any provision whatever made in the Imperial University of Tokyo nor in any other

institution of this country for the convenience of the students of algæ, I had to gather the literature and specimens absolutely myself with very limited allowance of means. Consequently the literature which are quoted under each species are restricted only to those which I had chance to concert with.

Before closing this preface, I would like to express my sincere thanks to those who have assisted me by specimens and works : to Prof. J. G. Agardh of Lund ; to Mr. Reinbo'd of Itzehœ ; to Prof. N. Wille of Christiania ; to Dr. Kjellman of Upsala ; to Prof. G. B. de Toni of Padova ; to Dr. M. Foslie of Trondjehm ; to Prof. J. Reinke of Kiel ; to late Prof. Fr. Schmitz, and others. To late Prof. Dr. R. Yatabe, my first instructor on botany, I wish to render thanks for the general guidance he gave on my study. Lastly, I would like to acknowledge all kinds of help given by those who have sent me materials from different localities of this country.

October 1st, 1900,
Tokyo.

K. OKAMURA.



序

元祿三年(西曆一千六百八十九年)獨逸ノ人エンゲルベルト、ケムプフェル (Engelberto Kämpfer) 氏ノ來朝セル以來本邦ノ海藻海外ニ出ルモノ漸ク多ク爾來學者探檢家頻リニ我邦ノ海藻ヲ採集シ之ヲ研究シテ世ニ公ニセリ中ニ就テ其著名ナルヲ Harvey, Suringar, Mairiens, Kjellman 等トス; 一千八百九十一年遂ニ Hariot 氏ノ横須賀産海藻ノ出版セラル、ニ至リ此時ニ於テ已ニ知ラレタル其種類二百五十四種ニシテ余ノ以太利ノ學者 De Toni 氏ニ贈リタル標品ニヨリテ氏ノ著シタル日本海藻誌ニハ三百〇四種ヲ舉ゲタリ近來又 Holmes 氏ノ新種ヲ加ヘタルアリ其既ニ海外學者間ニ知ラレタル種類斯ノ如ク多キニ至レリ然レトモ此等諸學者ノ研究シタルモノ未タ諸書ニ散見シテ篇ヲナセシモノアラズ況ンヤ其圖說ノ如キニ於テオヤ、

余ハ明治二十一年以來本邦産海藻ノ研究ニ從事シ專心一意之ガ啓發ニ勉メ又他ヲ顧ルノ暇アラズ其間得ル所未ダ甚ダ多カラズト雖モ既ニ研究シタルノ種類三百ニ超ルモノアリ今ニシテ之ガ各種ノ圖說ヲ完成シ諸書ニ散見スルモノヲ一書ニ總合シテ以テ後學ノ參考ニ資セントス然レトモ我邦學術界ノ情況ハ未ダ歐米ノ如ク研究ニ便ナラズ我大學ノ如キスラ其藏スル海藻學書僅々指ヲ屈スルニ過ギズ又其標品ノ如キモ參考トスルニ足ルモノ少ナシ是ヲ以テ余微力ヲ揣ラズ苦心經營以テ此學ノ書籍ヲ聚メ海外ノ標品ヲ蒐メ今ヤ聊カ觀ルベキモノアリト雖モ尙ホ

(二)

歐米學術界ノ如キ饒富ナル者アルニアラズ故ヲ以テ余ノ
茲ニ圖說スル種類ノ如キ必ズヤ他日訂正ヲ要スルモノア
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明治三十三年十月一日

東京ニ於テ

理學博士 岡村金太郎





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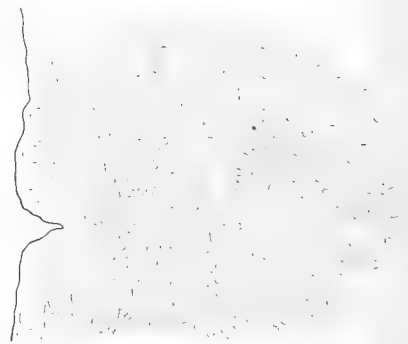
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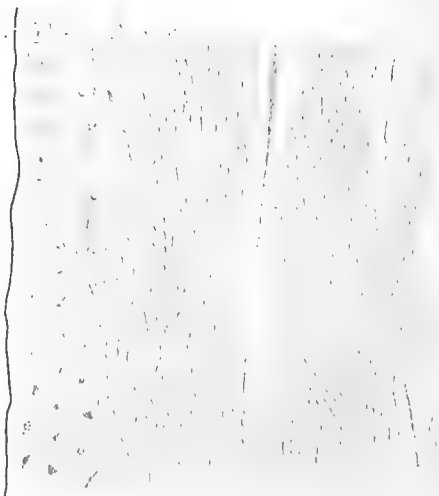
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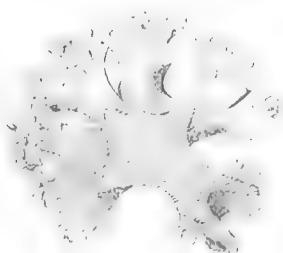
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PLATE I.

Yatabella Gen. Nov.

GELIDIACEÆ.

Yatabella: *Frond* filiform, growing in monopodial manner, irregularly branched, consisting of two layers of cells; the inner, of larger, elongated cells, surrounded by very numerous and densely packed slender, longitudinally running filaments, covered by a few layers of smaller, roundish, cortical cells. *Banches* closely imbricated with multifid-echinate ramuli. *Sporophylls* produced from the prolongation of spines of ramuli. *Tetraspores* roundish and cruciately divided, being lodged among cortical cells of roundish, shortly stipitate sporophylls. *Cystocarps* binocular.

Yatabella hirsuta Sp. nov.

NOM. JAP. *Yatabe-gusa*.

Diagn.: *Frond* filiform, primarily erect, subsequently decumbent, irregularly branched. *Branches* closely set on all sides with multifid echinate, peltate ramuli, adhering to any object coming in contact with the frond. *Tetraspores* collected in an irregularly roundish, shortly stipitate sporophylls. *Cystocarps* globular, with or without apical prominence, shortly stipitate.

Hab. On rocks and stones at the depth of 8-9 fathoms; Hiuga and Kagoshima-prefecture.

Descr. *Root* a small disc with fibres. *Fronds* single or tufted, 15-20 cm. high, branching from base without any definite order.

Branches arising on all sides, very patent, often 3-4 being arranged along one side. They are cylindrical, and attenuated above. They grow up here and there into flat, lanceolate or oblong, midribbed segments, becoming often very much slender and filiform above, adhering to other bodies such as stones, gravels, shells, etc. By this way, the plant subsequently takes decumbent habit. All parts, save the denudated stem, bases of branches and the upper slenderer filiform portions, are closely loaded with multifid echinate warts which are peltate in insertion and are fixed to the branch by a slender neck. They are set as if imbricated, and the rachis may be seen through them, when not much crowded. A section of thicker portion of branches shows 4-5 of them surrounding angular axis or rachis. The echinate ramuli arise, at first, forming a minute prominence below the apices of branches which elongate in monopodial manner. *Tetraspores* are produced in a small, roundish or elongato-oval, shortly stipitate sporophylls which are formed by the prolongation of spinose ramelli of echinate ramuli. *Cystocarps* are minute globular or oval, with or without apical prominence and furnished with slightly swollen pedicels. *Colour* is dull purplish-red. *Substance* is rigid and harsh to the touch. In drying the plant does not adhere to paper.

The external appearance of the plant resembles *Thamnoclonium hirsutum* on account of having echinate ramuli; but the plant is widely different from the latter in many characters. Of the plants growing in this country, it presents some external resemblance to *Acanthopeltis japonica* Okam., which also belongs to the family *Gelidiaceæ*. *Acanthopeltis*, however, is synpodial in its mode of growth, while the present plant has monopodial growth. And on this account, *Yatabella* shows no affinity with *Acanthopeltis*, notwithstanding its external resemblances.

So far as I can judge from literature only, among the genera in *Gelidiaceæ*, *Ptilophora* seems to show some relations to the present plant from the presence of very numerous, stiff, spinose, processes growing from the surface of the frond. The abnormal growth of a lanceolate midribbed branches in the present plant seems as if to show its affinity with those plants which have flat and midribbed fronds.

I have collected the present plant at Oriuzako in the province of Hiuga on 13th July 1899, i.e. two days after my receiving the lamentable news about the untimely death of my much honored teacher, Prof. R. Yatabe who died on 7th July of the same month. For his honour I have selected the generic name "*Yatabella*," as the generic name "*Yatabea*" was established formerly by Maximowicktz, though that genus was afterward reduced as the synonymy of *Ranzania* Ito.

Plate I. Fig. 1: plant in nat. size.—Fig. 2: upper portion of branch showing filiform and flat segments, $\frac{2}{1}$.—Fig. 3: portion of the cross section of frond, $\frac{240}{1}$.—Fig. 4: portion of the longitudinal section of frond, $\frac{240}{1}$.—Fig. 5: terminal portion of branch, $\frac{16}{1}$.—Fig. 6: cross section of branch, $\frac{16}{1}$.—Fig. 7: one of sporophylls bearing tetraspores, $\frac{52}{1}$.—Fig. 8: cystocarps, $\frac{16}{1}$.

第一圖版

Yatabella Gen. Nov.

やたべぐさ屬 (新屬)

てんぐさ科

性質. 體ハ細圓柱狀,單基成長ヲナシ,不規則ニ分枝シ,二層ヨリ成ル,内層ハ稍太キ長キ細胞ト之ヲ繞圍シテ緻密ニ填充セル許多ノ細キ縱走セル糸トヨリ成リ,一二層ノ小ニシテ圓キ皮層細胞ヲ以テ蔽ハル. 枝ハ密ニ稍覆瓦様ヲナセル小枝ヲ以テ蔽ハル; 小枝ハ其頂端多ク裂ケ尖銳ナリ. 成實葉ハ小枝ノ先端伸長シ展開シテ以テ成ル. **四分孢子**ハ球狀ニシテ十字様ニ分裂シ圓形ニシテ短柄ヲ有スル成實葉ノ皮層中ニ存ス. **囊果**ハ二室ヨリ成ル.

Yatabella hirsuta Sp. nov.

やたべぐさ (新種)

性質. 體ハ細圓柱狀,不規則ニ分枝シ,始メ直立シ後傾臥ス. 枝ハ周圍ニ小枝ヲ密生シ,所々ニテ他物ニ固着ス; 小枝ハ多裂尖銳ニシテ楕狀ニ生ズ. **四分孢子**ハ不定形ノ圓形ナル短柄ヲ有スル成實葉ニ群集ス. **囊果**ハ球狀ニシテ頂端尖リ若クハ鈍圓,短柄ヲ有ス.

產地. 八一九尋ノ深サナル石上ニ錯綜ス. 日向折生
追ニ於テ明治三十二年七月始メテ發見ス. 鹿兒嶋縣ニモ

アレドモ其產地今詳ナラス。果實ハ七月。(恐ラクハ琉球諸島ニモ産スルナルベシ)

根ハ小盤狀根並ニ纖維根ヲ有ス。體ハ個立シ或ハ叢生シ、高サ 15-20 cm. ニシテ、一定ノ規則ナク基部ヨリ分枝ス。枝ハ各方面ヨリ出デ、廣開シ、往々三四枝同一ノ側ニ生ジ、細圓柱狀ニシテ上部ニ細瘡ス；而シテ處々扁平披針狀ニシテ中肋ヲ有スル枝ニ開張スルコトアリ、又往々上方ニ甚シク細クナリテ絲狀ヲナシ以テ石、砂、貝等ニ固着ス。斯ノ如クシテ始メ直立セル體ハ後傾臥シ錯綜スルニ至ル。枝ノ基部又ハ小枝ノ墜落シタル部分若クハ上部ノ細糸狀部ヲ除クノ外體ハ多尖裂ノ小枝ヲ以テ密蔽セラル；小枝ハ其排列楕狀ニシテ細柄ヲ以テ枝ヨリ生ジ、恰モ覆瓦様ヲナシ、其甚シク重疊セザル所ニテハ小枝ノ間ヨリ枝ノ面ヲ覗フヲ得ベシ。斯ノ如キ枝ヲ横斷スレバ角張リタル軸ノ周圍ニ四五ノ小枝ノ出ルヲ見ルベシ。小枝ハ始メ枝ノ頂端ノ下部ニ小突起ヲナシテ生ズ；枝ハ單基伸長ヲナス。四分孢子ハ多尖裂ノ小枝ノ先端伸長シ展開シテ成リタル成實葉ニ生ズ。成實葉ハ小ニシテ圓キ若クハ長卵圓形ノ短柄ヲ有ス。囊果ハ小球狀若クハ卵圓形ニシテ頂端少シク尖リ又ハ鈍圓ニシテ稍膨レタル柄ヲ有ス。色ハ暗紅色。質ハ硬ク、強韌ニシテ、粗糙ナル觸覺ヲ覺ユ。乾燥スルトキハ紙ニ付着セズ。

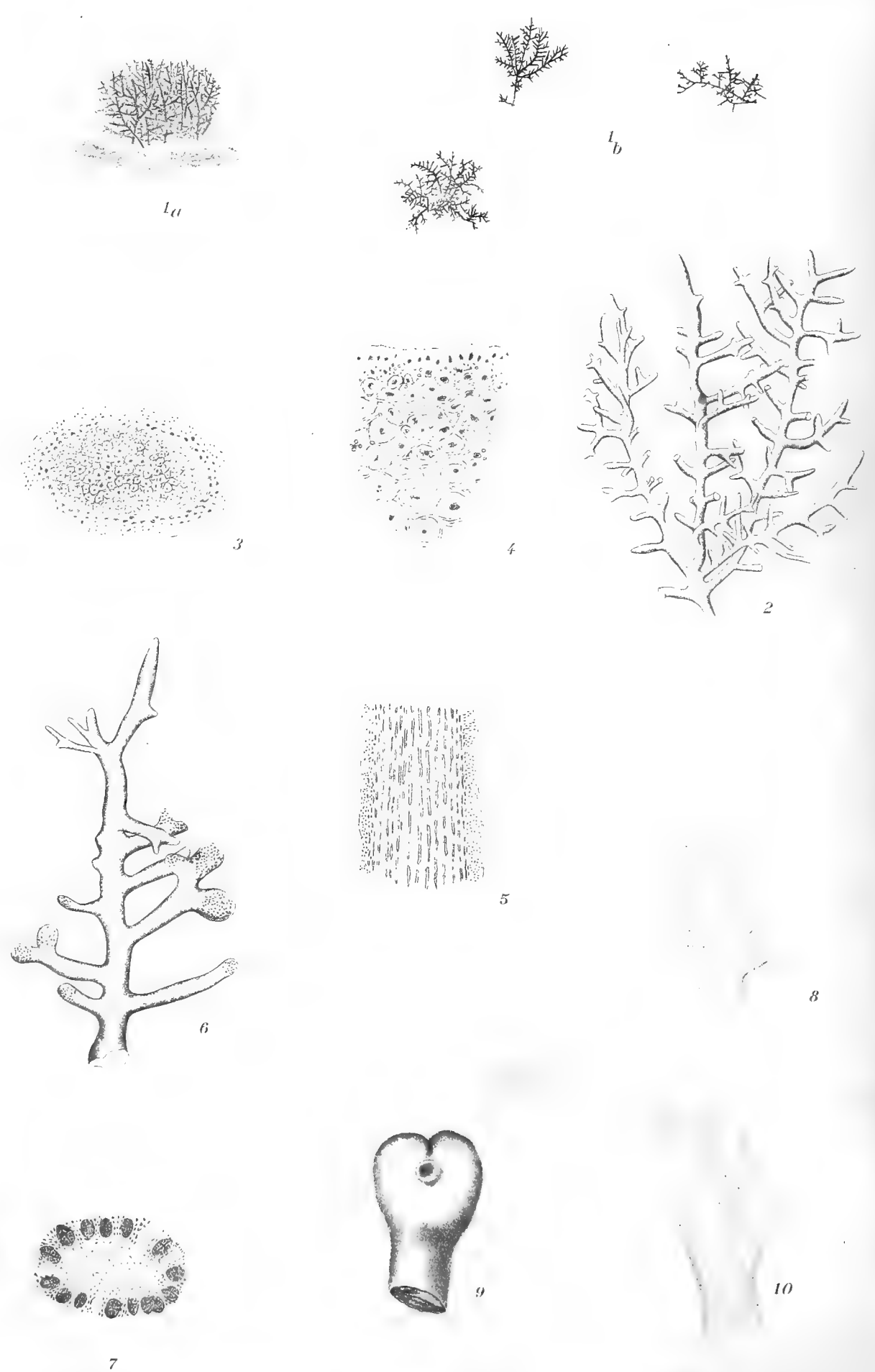
體ノ外形ハ多尖裂ノ小枝ヲ有スル爲ニ *Thamnoclonium hirsutum* ニ類スレトモ其本種ト異ナルハ全ク科ノ異ナル

植物ナレバ差異ヲ説クノ要ナシ。本邦ニ産スル海藻中ニテハ外形 *Acanthopeltis japonica* Okam. (ゆひきり)ニ能ク類似シ *Acanthopeltis* モ亦てんぐさ科ノ植物ナリ。然レトモ、*Acanthopeltis* ノ體ノ伸長ノ方法ハ聯基ナルヲ以テ單基伸長ヲナセル本植物ト異ナリトス。此故ニ、*Yatabella* ハ外形ノ酷似スルニモ拘ラズ *Acanthopeltis* ト類縁ヲ有スルモノニアラズ

参考書ノ記載ノミニ依リテ余ノ判斷スル所ニテハてんぐさ科ノ諸屬中、*Ptilophora* ハ其體扁壓ニシテ表面ヨリ多數ノ硬キ、尖銳ナル小突起ヲ生ズル點ヨリ本植物ト或關係ヲ有スルモノ、如シト思ハル。本植物ニ於テ往々披針狀ノ中肋ヲ有スル扁壓ナル枝ヲ生ズルコトアルハ以テ本植物ガ扁壓ニシテ中肋ヲ存スル所ノ體ヲ有スル植物ト類縁ノ係ルモノアルコトヲ證スルニ足ル。

本植物ハ明治三十二年 (1899) 七月十三日日向國折生迫ニ於テ余ノ始メテ發見シタル所ニシテ此日ハ實ニ余ガ恩師矢田部博士ノ訃音ニ接シタル後二日ナリ。先生ハ同月七日不幸ニシテ鎌倉ニ於テ永眠セラレタリ。故ニ先生ノ鴻恩ヲ追想シテ此植物ニ *Yatabella* ノ屬名ヲ撰ミ以テ先生ノ名譽ヲ不朽ニ傳ヘントス。元來 *Yatabea* トスル方至當ナレトモ *Yatabea* ハ曩ニ Maximowicz 氏ノ新設シタル有花植物ノ屬名ニシテ其未ダ世ニ公ニセラレザルニ際シ伊藤篤太郎氏之ヲ *Ranzania* トシテ出版シタルニ依リ *Yatabea* ノ名ハ *Ranzania* ノ異稱トセラレタルヲ以テ聊カ此海藻ヲ *Yatabea* トスルノ嫌アルガ爲メナリ。

第一圖版. 第一圖: やたべぐさ, 自然大. — 第二圖: 枝ノ上部扁平ノ部分ト糸狀ノ部分トヲナシ糸狀ノ部分ハ砂礫ニ付着シタル狀, $\frac{2}{1}$. — 第三圖: 横斷面ノ一部, $\frac{240}{1}$. — 第四圖: 縦斷面ノ一部, $\frac{240}{1}$. — 第五圖: 枝ノ上部ニシテ枝ノ頂端並ニ小枝ノ生ズル狀及ビ其密集スル狀, $\frac{16}{1}$. — 第六圖: 枝ノ横斷面, $\frac{16}{1}$. — 第七圖: 四分胞子ヲ有スル成實葉, $\frac{52}{1}$. — 第八圖: 囊果, $\frac{16}{1}$.



K. Okamura del.

Gelidium divaricatum Martens.

ひめてんぐさ

PLATE II.

Gelidium divaricatum Martens.

GELIDIACEÆ.

NOM. JAP. *Hime-tengusa*.

Gelidium divaricatum Martens Preus. Exped. n. Ost.-Asien, p. 30, Taf. VIII, Fig. 4.—De Toni Syll. Alg., Vol. IV, p. 159.—Okam. Alg. Jap. Exsic., Fasc. I, no. 4.

Fronde dwarf, densely cœspitose in pulvinate manner, expanding in wide patches, erect, neither creeping nor furnished with repenting portion, attaining the height of 1—1.5 cm. Fronds are compressed or almost cylindrical and divaricately branch in some main segments which are furnished with once or twice pinnated branchlets. *Branchlets* are of unequal lengths, alternate or opposite, not strictly distichous, but irregularly inserted on all sides, very patent, and terminate in blunt or acute apices. *Fruits* of both kinds are formed in swollen apices of branchlets. *Tetraspores* form a dense roundish sorus. *Cystocarps* are globular, blunt or slightly notched at the apex. *Colour* brownish red, turning to blackish when dried. *Substance* [cartilaginous and the plant does not adhere to paper in drying.

Hab. On rocks near high tide; Hiuga, Tosa, Ise, Idzu, Sagami, Bōshū, Rikuzen. Tschifu (China).

Hithertoknown : Hongkong (Martens).

This plant may be placed under the subgenus *Acrocarpus* in the vicinity of *Gelidium pusillum*.

Plate II. **Fig. 1 a**: plant in nat. state (nat. size); **1 b**: three fronds detached (nat. size.)—**Fig. 2**: portion of frond, slightly magd.—**Fig. 3**: cross-section of frond, $\frac{85}{1}$.—**Fig. 4**: portion of the same, $\frac{240}{1}$.—**Fig. 5**: longitudinal section of frond, $\frac{85}{1}$.—**Fig. 6**: portion of frond bearing tetraspores, moderately magd.—**Fig. 7**: cross section of the same, $\frac{85}{1}$.—**Fig. 8**: portion of frond bearing cystocarps, $\frac{8}{1}$.—**Fig. 9**: cystocarp, moderately magd.—**Fig. 10**: longitudinal section of cystocarp, $\frac{52}{1}$.

第 二 圖 版

Gelidium Lamouroux.

てんぐさ屬

てんぐさ科

性質、體ハ圓柱狀又ハ兩縁ニ薄クシテ扁平、概ネ側部ヨリ羽狀ニ分枝シ、極メテ緻密ニシテ強靱ナル組織ヲ以テ成リ、緻密ナル皮層ヲ有ス。外層ハ一二層ノ小細胞ヨリ成リ、内層ハ縱走シテ緻密ニ結合セル無數ノ細キ糸狀細胞ヨリ成リ、以テ充分ニ一條ノ細キ中軸ヲ圍繞ス；此糸狀細胞ノ一部ハ稍太クシテ細キ圓柱狀ノ如ク見ヘ、一部ハ極メテ細クシテ無色ノ光澤アル絲ノ如ク見ユ；中軸ハ老成部ニハ往々不明ナレトモ頂部ニハ稍明カナリ而シテ横ニ關節セル頂細胞ヲ有ス。四分孢子群ハ圓柱狀若クハ往々扁壓セル且ツ其部分丈少シク増厚シタル枝ニ生ジ、多少頂端ニ近ク密生シ、常ニ兩面ノ皮層中ニ生ズ；長橢圓形ニシテ十字狀ニ分裂ス。囊果ハ枝ノ兩側即チ兩面ニ(稀ニ一側)隆起セル膨レヲ生ジ、多少枝ノ頂端ニ近ク生シテ、小ニシテ、二室ヨリ成リ、稀ニ一室ナリ。孢子ハ中軸層ニ沿フテ生ズ(即チ兩室ノ中隔ヲ作レル部分ノ兩面ニ生ズ)。果皮ハ體ノ皮層ヨリ形成セラレテ隆起シ、多數ノパラフキシスニ依リテ孢子層ト内壁トヲ結合ス、而シテ果皮ハ各側ニ果孔ヲ開ク。

Gelidium divaricatum Martens.

ひめてんぐさ (岡村稱)

Gelidium divaricatum Mart. Preus. Exped. n. Ost-Asien, p. 30, Taf. VIII, Fig. 4.—De Toni Syll. Alg. Vol. IV, p. 159.—岡村, 日本海藻標品, 第一帙第四.

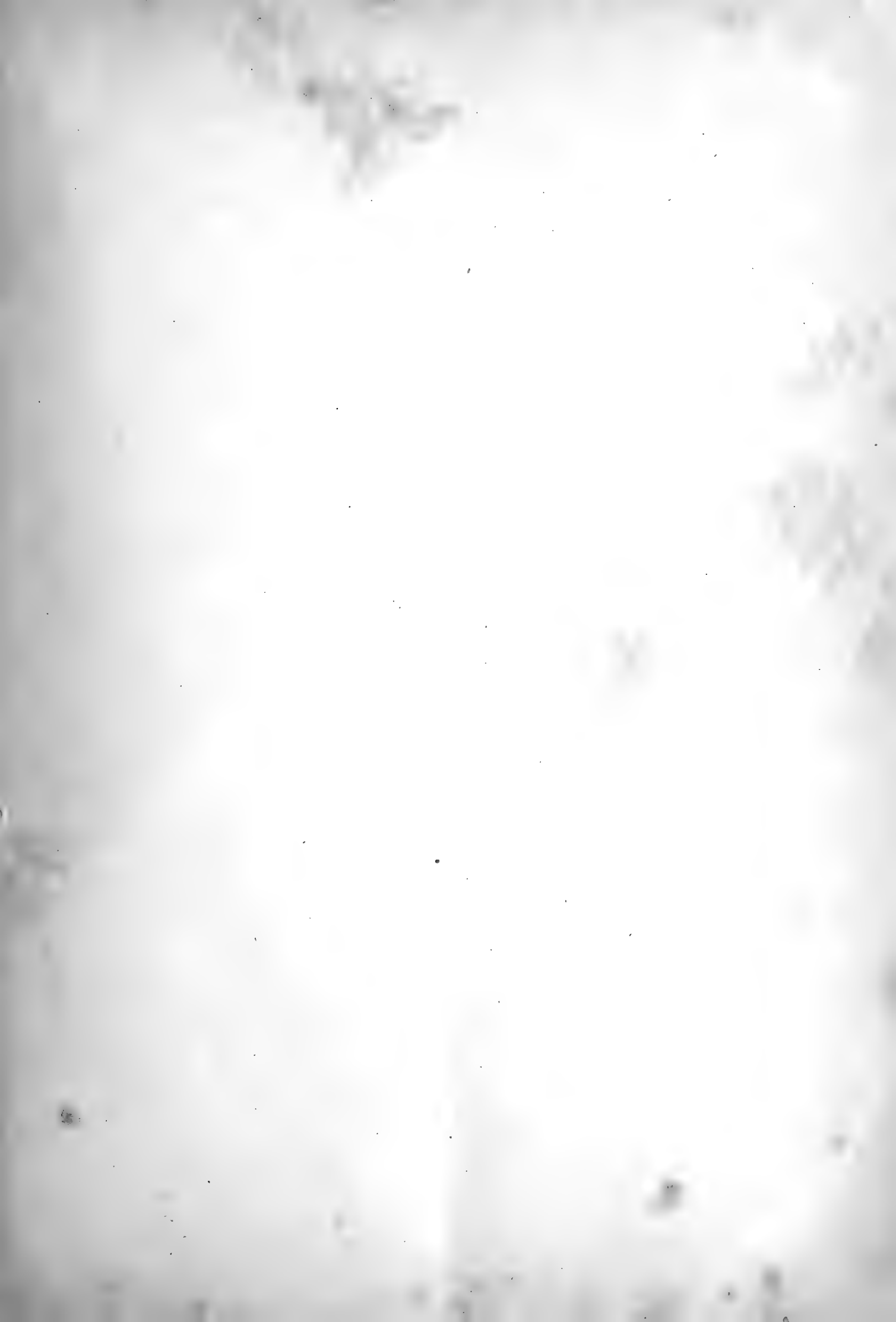
性質. 體ハ矮小ニシテ, 廣キ部分ヲ蔽ヒテ密ニ叢生シ, 匍匐スルコトナク, 又匍匐スル部分ヲ有セズシテ直立シ, 1—1.5 cm. ノ高サヲ有ス. 體ハ殆ド圓柱狀若クハ匾圓, 不規則ニ數條ノ主枝ニ分レ各枝ハ一回若クハ二回羽狀ヲナセル小枝ヲ有ス. 小枝ハ互生又ハ對生ナレトモ正シキ二列ニハアラデ枝ノ各方面ヨリ發出シ, 廣開シ, 鈍圓又ハ尖銳ニ終ル. 兩種ノ實ハ小枝ノ稍膨レタル頂部ニ生ズ. **四分胞子群**ハ圓形ヲナシ; **囊果**ハ圓形ニシテ頂端鈍圓若クハ稍凹形ヲナス. 色ハ暗紅色ニシテ乾燥スルトキハ黑色ノ如シ. 質ハ軟骨質ニシテ, 體ハ乾燥スルトキハ臺紙ニ附着セズ.

產地. 高潮線附近ノ岩石介殼上ニ生ズ; 日向, 土佐, 伊勢, 伊豆, 相模, 房州, 陸前. 芝罘(山本勝次)

既知產地. 香港 (Martens).

此植物ハ亞屬 *Acrocarpus* 中ニ容ルベキモノニシテ *Gelidium pusillus* ニ近シ.

第二圖版. 第一圖 a: ひめてんぐさノ叢生スル狀, $\frac{1}{1}$;
 b: 三個ヲ別離シタルモノ, $\frac{1}{1}$. — 第二圖: 體ノ一部, 稍廓大.
 — 第三圖: 體ノ横斷面, $\frac{8.5}{1}$. — 第四圖: 同上ノ一部, $\frac{24.0}{1}$. — 第五
 圖: 體ノ縦斷面, $\frac{8.5}{1}$. — 第六圖: 四分胞子ヲ有スル體ノ一部,
 稍廓大. — 第七圖: 同上ノ一部, $\frac{8.5}{1}$. — 第八圖: 囊果ヲ有スル體
 ノ一部, $\frac{8}{1}$. — 第九圖: 囊果ノ稍廓大. — 第十圖: 囊果ノ縦斷面,
 $\frac{5.2}{1}$.



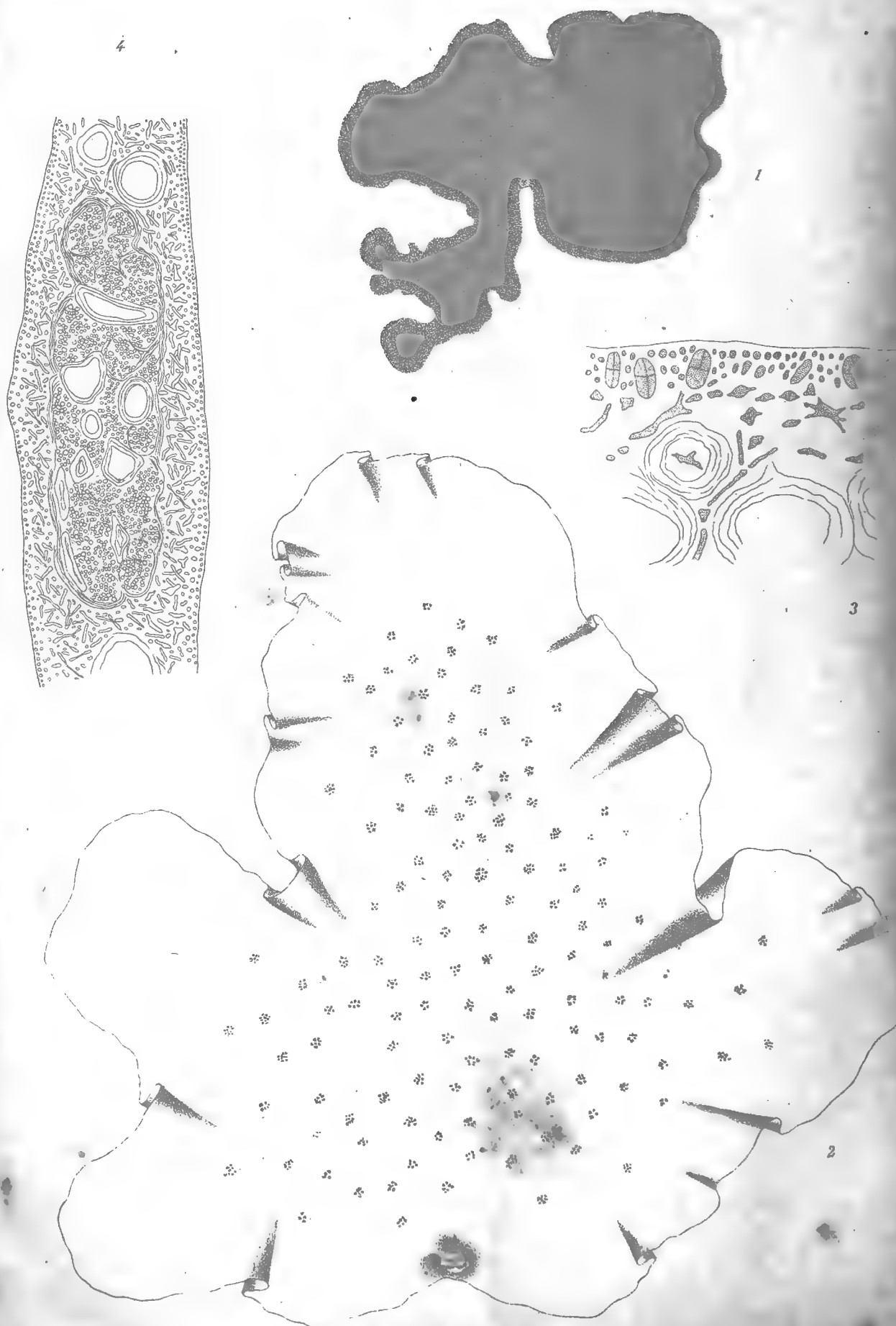


PLATE III.

Microcoelia chilensis J. Ag.

GIGARTINACEÆ.

NOM. JAP. *Kim-hada*.

Microcoelia chilensis J. Ag. Epicr., p. 227.—De Toni Syll. Alg., Vol. IV, p. 290.—*Callophyllis* (*Microcoelia*) *chilensis* (J. Ag.) Engl. et Prantl. Natürl. Pflanzenfam. p. 362.—Okam. Alg. Jap. Exsic., Fas. I, no. 12.

Fronde sessile, fixed to substratum by a marginal disc, often appearing as if umbilicated, broadly expanding into lobed membrane, attaining the height and breadth of 13–20 cm. in our specimens. *Margin* entire, and slightly undulated. *Cystocarps* roundish, 0.5–1.5 mm. in diameter, immersed in the inner layer of frond. *Tetraspores* oblong, densely dispersed among cortical layers. *Colour* coccineous red. *Substance* very gelatinous membrane and the plant firmly adheres to paper in drying.

Hab. Below low water mark, often growing on the shell of *Haliotis gigantea* from the depth of 20 fath. Shima, Bōshū. Fruit August.

Hitherto-known: Chili (Harvey).

Plate III. **Fig. 1**: Young frond in nat. size.—**Fig. 2**: frond bearing cystocarps in nat. size.—**Fig. 3**: Portion of frond bearing tetraspores, $\frac{50}{1}$.—**Fig. 4**: cross section of frond through a cystocarp, $\frac{240}{1}$.

第三圖版

Microcoelia J. Agardh.

きぬはだ屬

すぎのり科

性質. 體ハ粘滑ニシテ稍多肉,扁平葉狀ニシテ廣キ膜狀ニ廣ガリ,裂片ヲ有ス,二層ヨリ成ル; 内層ハ大ニシテ圓キ細胞數層ヨリ成リ,表面ニ近ツクニ隨テ小トナリ,細胞膜ハ粘質多クシテ細小ナル有色ノ糸狀細胞ヲ以テ填充セラレ; 此小細胞ハ稍錯綜シ,表面ニ近ツクニ隨テ短キ念珠狀ノ糸ヲナシ以テ皮層ヲ形成ス. 囊果ハ體ノ中央部ニ埋在シ,複仁ヨリ成リ,全體糸組織ヲ以テ圍繞セラレ,後皮層ノ一部破レテ胞子ヲ散ズ; 小仁ハ體ノ中層ヲナセル細胞ノ間ニ存シ,錯綜セル胎座タル糸ヲ以テ互ニ區劃セラレ,圓形ヲナシ,少許ノ圓キ若クハ少シク角味アル果胞子ノ不規則ニ團集セルモノヨリ成ル. 四分胞子ハ體ノ兩面ニ散在シ,皮層ノ細胞ヨリ變成シ,俵狀ニシテ十字樣ニ分裂ス.

此屬ハ外形 *Kallymenia* ニ酷似スト雖モ,造構ノ點ニ於テ異ナリトス, *Kallymenia* ハ全體糸狀組織ヲ以テ成レバナリ. 此屬ノ造構ハ *Polycœlia* ニ類スレトモ *Polycœlia* ハ内層ノ大ナル細胞ガ體ノ表面ニ並行シテ只一層ノミヲ存スルヲ以テ此屬ト區別セラル. 此屬ノ造構ハ實ニとさかもどき屬 (*Callophyllis*) ニ酷似シ,或學者ハ此故ヲ以テ之ヲとさかもどき屬中ニ編入シタルモアリ; 然レトモ J. Agardh 氏ハ尙

ホ別屬トスルノ意見ヲ有ス。氏ノ意見ハ *Callophyllis* ハ中層ノ大ナル細胞ト細胞トノ間隙狹クシテ規則正シク且ツ此細胞間ニ錯綜スル小細胞ハ此屬ノモノ、如ク多カラズ; 此屬ニアリテハ中層ノ大ナル細胞ト細胞トノ間隙ハ廣狹不規則ナリト云フニアリトス。

Microcoelia chilensis J. Agardh.

きぬはだ 新稱

Microcoelia chilensis J. Ag. Epicr. p. 227.—De Toni Syll. Alg. Vol. IV, p. 290.—*Callophyllis chilensis* Engl. et Prantl. Natürl. Pflanzenfam. p. 362. —岡村日本海藻標品第一帙第十二。

性質。體ハ廣キ膜狀ニシテ不定ノ裂片ヲ有シ、縁邊ニ一ノ小盤狀根ヲ生ジテ他物ニ付着シ、無柄ニシテ往々臍形ヲナス;(嘗テ一度豆州網代ニテ短柄ヲ有シ楕狀ニ開張セルモノヲ採集シタルコトアリ)。大サ 13-20 cm. ノ圓形ヲナス。縁邊ハ全縁ニシテ稍波皺ヲナス。囊果ハ圓形ニシテ、直徑 0.5-1.5 mm. ヲ有シ、體ノ内層ニ埋在ス。四分孢子ハ兩面ニ密ニ散布ス。鮮紅色。質甚ダ粘滑ニシテ乾燥スルトキハ紙ニ密着ス。

產地。低潮線以下ノ岩石介殼等ニ生ジ往々房州ニテ二十尋ノ深所ヨリ獲タルあわびノ殼上ニ得ルコトアリ。囊果ハ房州ニテ八月。

既知產地。チリー(Harvey)。

第三圖版 第一圖：きぬはだノ幼キ體, $\frac{1}{1}$. — 第二圖：囊
果ヲ有スル體, $\frac{1}{1}$. — 第三圖：四分胞子ヲ有スル部分ノ體ノ横
斷面ノ一部, $\frac{50}{1}$. — 第四圖：囊果ノ部分ヲ横斷セル體ノ横斷
面, $\frac{240}{1}$.





PLATE IV.

Herposiphonia fissidentoides (Holm.) Okam.

RHODOMELACEÆ.

NOM. JAP. *Hime-goke*.

Herposiphonia fissidentoides (Holm.) Okam. Contrib. to the Knowl. of the Mar. Alg. of Japan, III, p. 10-11, Pl. I, fig. 9-11.—*Polyzonia fissidentoides* Holmes, New Mar. Alg. Jap. No. 22. t. XII, f. 2 a-b. (Journ. Linn. Soc., Bot., Vol. XXXI.)

Fronds creeping on various kinds of calcareous algæ, decumbent, rooting from under surface. The "*Langtriebe*" arise alternately from every fourth articulation; and the "*Kurztriebe*," which are flat and leaf-like, stand almost horizontally in double rows along the upper side of the decumbent stem, giving a dorso-ventral appearance for the plant. The latter arrangement of the "*Kurztriebe*," however, is rather obscure; for, although the leaves (i.e. "*Kurztriebe*") are in reality inserted on the dorsal side of the shoot, yet they spread out very widely on both sides, and appear to lie apparently on the same plane as the "*Langtriebe*." The "*Kurztriebe*" (i.e. leaves) varies from ovato-lanceolate to oblong, ending in a broadly acute apex with a tapering or constricted and oval base. The broader leaves slightly overlap one another with their edges. The length and the breadth of leaves measure 560-750 μ and 131-281 μ respectively. Their surface is composed of horizontally arranged hexagonal cells of approximately equal length (34-38 μ) and shows 7-11 cells in the widest row. The apices of "*Langtriebe*" are not inrolled, but flat and straight; the "*Kurztriebe*" are patent or almost horizontal, at first curving towards the growing apex of the shoot,

afterwards becoming flat and straight. In some specimen, a "Kurztrieb" has been found to show an abnormality as illustrated in Fig. 3 a, and Fig. 5. *Pericentral cells* are 9–10 in the main branches, thoroughly ecorticated, with articulations half as long as broad. *Tetraspores* are formed in the more linear leaves, i.e. in the "Kurztriebe," which contain 3 or 4 of them in a single longitudinal row in lower articulations, and are externally covered by two or sometimes three cells. *Procarps* are developed on either side but mostly on the outer side of the leaves slightly beneath the apex. *Cystocarps* are oval with a rather wide ostiole, provided with a more or less elongated turbinate pedicel, which has mostly one or sometimes two wart-like or somewhat short spur-like prominences on both sides near the base of the cystocarp. When two of such prominences are present, one is smaller than the other; but, one or both may be sometimes entirely absent. Of the two prominences, the one is transformed from the remnant of the apical portion of the original leaf, and the other is of secondary formation.

Hab. On fronds of various kinds of calcareous algæ and others. Hiuga, Kishū, Sagami, Bōshū, Noto. Fruit—summer.

This pretty plant has been first described by Mr. Holmes from materials collected at Enoshima by Mr. S. Okubo. After carefully studying the fructified specimens, I have been led to refer this species to *Herposiphonia*, and not to *Polyzonia* as Mr. Holmes has done.

At first glance, the plant appears to have a habit remarkably resembling that of *Polyzonia*. But, the characters of the plant being as just described, it should, in spite of external resemblance arising from the obscurity of dorso-ventral arrangement, be separated from *Polyzonia*; for in *Polyzonia* there is no regularity

in the disposition of "Langtriebe," from which both kinds of fruits are developed, while in the present plant they are formed from "Kurztriebe."

Plate IV. **Fig. 1**: fronds creeping on *Amphiroa*, $\frac{2}{1}$.—**Fig. 2**: frond magnified, $\frac{10}{1}$.—**Fig. 3**: portion of frond more highly magnified, $\frac{22}{1}$; *a*, leaf showing an abnormality.—**Fig. 4**: leaf, $\frac{85}{1}$.—**Fig. 5**: *a* of **Fig. 3** magnified, $\frac{91}{1}$.—**Fig. 6**: cross section of stem, $\frac{220}{1}$.—**Fig. 7**: cross section of leaf, $\frac{52}{1}$.—**Fig. 8**: root, $\frac{85}{1}$.—**Fig. 9**: two "Kurztriebe" developed tetraspores, $\frac{52}{1}$.—**Fig. 10**: two young cystocarps formed on "Kurztriebe," $\frac{91}{1}$.—**Fig. 11**: Kurztrieb producing a procarp; *a*, the original apex, $\frac{240}{1}$.—**Fig. 12**: cystocarp $\frac{50}{1}$; *a*, the original apex of a "Kurztrieb;" *b*, the secondary prominence.

第 四 圖 版

Herposiphonia Nägeli.

ひ め ご け 屬

ロ ド メ ラ 科

性質. 體ハ匍匐シ,細根ヲ出シテ他物ニ付着シ,平臥セル匍莖ヨリ直立シ,或ハ稀ニ全ク游離直立シ,側面ヨリ分枝シ,圓柱狀,扁平若クハ角張リテ扁壓ナリ. 枝ハ明ニ長條ト短條トニ分ル. 長條ハ腹背ノ體制ヲ有シテ伸ビ,背面ニ多少強ク屈曲セル頂端ヲ有シ,側部ヨリ二列ニ長條ヲ互生ス; 其起點ハ必ズ軸ノ第四節ヨリ生ズ; 又背面ヨリ二列ニシテ互生セル(稀ニ殆ド一列)短條ヲ生ズ,而シテ短條ハ長條ノ出デザル節ヨリ出ヅ(即チ一ノ長條ハ其出ル部分ト同一ノ側ニ於テ其長條ノ出タル節ヨリ上ノ方ヘ一節巨テ、次ノ節ヨリ短條ヲ出ダスナリ,故ニ一長條ト上ノ方ヘ互生セル次ノ長條トノ間ニハ一方ノ側ニハ一短條アリテ他ノ側ニハ二短條ヲ生スル譯ナリ). 短條ハ大抵早ク其伸長ヲ止メ,輻狀若クハ腹背狀ニ組立ラレ,始メ腹面ノ方ニ屈曲シ,後直出スル頂端ヲ有シ,全長分枝スルコトナク,頂部ヨリ毛狀體ヲ生ズ; 毛狀體ハ短條ノ背面ヨリ互生若クハ螺旋狀ニ生ジ,早落シ,分枝ス. 諸軸ノ頂點ハ横ニ若クハ稍斜ニ關節セル頂細胞ヲ以テ伸長ス; 關節セル細胞ノ内一方ノ側ニ稍發達シタルモノハ直チニ一個ノ枝トナル; 斯ノ如キ細胞バ,必ズ規則正ク互生ヲナシ,忽チ短條ニ若クハ(時トシテハ徐々ニ)長條ト成ル. 總テノ關節ハ大抵多數ノ周心細胞ヲ

分裂シ、周心細胞ハ終生皮層細胞ヲ被ルコトナシ。生殖器ハ短條ニ生ズ。四分孢子囊ハ毛狀體ナキ若クハ既ニ之ヲ失ヒタル短條ノ下部若クハ中央部ニ生ジ、斷續セル不規則ナル直線若クハ背面ニ沿フテ一直線ヲナシ、外部ニハ常ニ二個ノ同長ノ皮細胞ヲ以テ蔽ハル。精子器ハ短條ノ頂端ニ於テ、毛狀體若クハ其小枝ニ生ジ、長メナル形狀ニシテ、單管軸ノ柄ヲ有シ、尖銳ニ終リ、表面ニ小キ細胞ヲ以テ成レル精子細胞層ヲ有ス。胎原ハ短條ノ頂端ニ於ケル單一ナル毛狀體ノ第二節ノ細胞ヨリ生ジ、カナリ小ナリ。囊果ハ球狀若クハ卵形ニシテ、成胞糸ハ束狀ヲナシ、孢子ハ成胞糸ノ頂端ニ生ジ、棍棒狀ナリ

此屬ハ從來 Polysiphonia (いどぐさ屬) 中ニ存シタレドモ體制ノ特異ナル點ヨリ別ニ一屬ヲナスニ至レリ

Herposiphonia fissidentoides (Holmes) Okam.

ひめごけ新稱

Herposiphonia fissidentoides (Holm.) Okam. Contr. to the Knowl. of the Mar. Alg. of Jap. III. p. 10, Plate I, Fig. 9-11. (植物學雜誌第十二卷 1899, 第四百十五號)—*Polyzonia fissidentoides* Holmes New Mar. Alg. Jap. no. 22, t. XII, f. 2 a-b. (Journ. Linn. Soc., Bot., Vol. XXXI.)

體ハ微小ニシテ、諸多ノさんごも科植物ノ體上ニ匍匐シ、匍匐莖ノ節々ヨリ盤狀根ヲ出シテ密着ス。軸ハ圓柱狀ニシテ概ネ 9-10 個ノ周心細胞ヲ有ス。長條ハ正シク各第四節ヨリ互生シ、匍匐莖ノ背面ヨリ生ジ、頂端屈曲セズシテ

直出ス。短條ハ扁平葉狀ニシテ披針狀卵形若クハ長橢圓形ヲナシ廣キ銳角ヲナセル頂端ニ終リ、基部クビレテ圓ミヲ有ス；其幅廣キモノハ縁邊ヲ以テ少シク互ニ重疊シ；長サ $560-750\mu$ ニシテ幅 $131-281\mu$ アリ；表面ハ水平ニ並ヘル略ボ同長ノ長六角形ノ細胞ヨリ成リ(長サ $34-38\mu$)、其最モ廣キ部分ニテ 7-II ノ細胞ヲ示ス；短條ハ廣開シテ殆ト水平ヲナシ、始メ軸ノ頂端ノ方ニ灣曲スレドモ後直出ス；其位置ハ實際軸ノ背面ヨリ出デタレトモ餘リニ廣開セルガ爲ニ一見シタル所ニテハ恰モ長條ト同一ノ平面ニアルガ如シ。軸ノ節間ノ長サハ其直徑ヨリハ短ク略ボ直徑ノ二分ノ一ナリ

四分孢子囊ハ狹キ短條即チ葉ニ生ジ其下方ノ關節ニアリテ三乃至四個一直線ニ聯ナリ、外面ハ二個稀ニ三個ノ皮細胞ヲ以テ蔽ハル。胎原ハ短條ノ頂端ヨリ少シク下ノ所ノ兩側ニ生ズレトモ大抵其外側ニ生ズルヲ多トス。囊果ハ卵圓形ニシテ廣キ果孔ヲ有シ多少長ミアル倒圓錐形ノ柄ヲ有ス；此柄ハ大抵一個或ハ時ニ二個ノ瘤狀若クハ稍短キ距狀ノ突起ヲ囊果ノ下部ニ近キ兩側ニ有ス；若シ其二個アルトキハ一ハ小ニシテ一ハ大ナリ；然レトモ其一若クハ兩者トモ缺クコトアリ。此等瘤狀突起ノ一ハ短條ノ頂端ノ殘物ニシテ他ノ一ハ後ニ形成セラルモノナリトス

產地。潮線間ノ諸さんごも類ノ體上ニ匍匐ス。日向、紀伊、相模、安房、能登。囊果及四分孢子ハ夏期(紀州)。

此細美ナル海藻ハ大久保三郎氏ガ相州江ノ島ニテ採集シタル標品ヲ英ノ Holmes 氏ニ贈リタルヨリ氏ノ始メテ記載シタルモノナリ。余モ始メハ氏ト同ジク之ヲ *Polyzonia* ニ編入シタルトモ種名詳ナラザリシヲ以テ公ニセザリキ。後紀伊ヨリ結實シタル標品ヲ得タルニヨリ之ヲ研究シテ其 *Polyzonia* ノ種類ナラザルヲ知リ之ヲ植物學雜誌ニ載セタリ。

一見シタル所ニテハ此海藻ハ *Polyzonia* ニ類スル體形ヲ有スレトモ性質上ニ記スルガ如クナルヲ以テ之ト區別ス。 *Polyzonia* ニテハ長條ハ不規則ニ生ジ、四分孢子囊及ビ囊果ハ長條ヨリ生ズレドモ、此植物ニテハ長條ハ各第四節ヨリ生ジ、兩種ノ果實ハ短條ヨリ生ズルヲ以テ異ナリトス

第四圖版。第一圖：かにてノ體上ニ匍匐スル狀、 $\frac{2}{1}$ 。
 一第二圖：體ノ一ヲ廓大シテ示ス、 $\frac{10}{1}$ 。一第三圖：體ノ一部ヲ更ニ廓大シテ長條ト短條トノ規則正シク出ル狀ヲ示ス、 $\frac{22}{1}$ ； α 、異常ノ發達ヲナシタル短條。一第四圖：短條即チ葉、 $\frac{15}{1}$ 。
 一第五圖：第三圖ノ α ヲ示ス、 $\frac{91}{1}$ 。一第六圖：長條ノ横斷面、 $\frac{220}{1}$ 。
 一第七圖：短條ノ横斷面、 $\frac{52}{1}$ 。一第八圖：根、 $\frac{85}{1}$ 。一第九圖：四分孢子ヲ有スル二個ノ短條、 $\frac{52}{1}$ 。一第十圖：短條ニ二個ノ幼キ囊果ノ生シタル狀、 $\frac{91}{1}$ 。一第十一圖：短條ニ幼キ囊果ノ生シタル狀； α 、元トノ短條ノ頂端、 $\frac{240}{1}$ 。一第十二圖：囊果、 $\frac{50}{1}$ ； α 、元トノ短條ノ頂端； b 、後ニ生シタル隆起。



11. *Phaseolus mimosoides* (L.) Harv.

豆科 (蝶形花科) (豆目)

PLARTE V.

Chlorodesmis comosa Bail. et Harv.

CODIACEÆ.

NOM. JAP. *Mayuhaki-mo*.

Chlorodesmis comosa Bail. et Harv. in Harv. Ner. Bor. Amer. III, p. 29.—J. Ag. Till. Alg. Syst. V, p. 50.—Engl. et Prantl. Die Natürl. Pflanzenfam. p. 141.—Aurainvillea comosa (Bail. et Harv.) Murr. et Bood. in Journ. of Bot. 1889.—De Toni Syll. Alg., Vol. I, p. 515.

Fronds penicillate, with or without stem, not incrustated, formed of dichotomously branched filaments which are somewhat constricted here and there, and in the constricted portions cell-wall is so thickened that the protoplasm is connected only by a narrow canal. The constrictions are very far separated in the most part of the upper portion of the filament, but in the lower portion, they are shortly separated, so that the basal portion of filament appears as if somewhat moniliform. The stem (when present) is short, cylindrical and spongy, consisting of entangled basal portion of filaments and root fibres which are emitted from the side of filaments. The thickness of filament in our specimens measures 60–140 μ , and the height of frond 2–7 cm. *Substance* very flaccid and the plant having finer filaments closely adheres to paper in drying, but that having thicker ones, not. *Colour* of filament is light green, becoming dark green in drying and that of stem is somewhat grayish green.

Hab. On coral reefs between tide marks. Riukiu Islands, Pinnacle Islands (N. E. from Taiwan), Hiuga.

Hitherto-known: Riukiu Islands, Friendly Islands, Feejee Islands, New Caledonia.

Plate V. **Fig. 1:** plant in nat. state, $\frac{1}{1}$.—**Fig. 2:** portion of filament and roots, $\frac{16}{1}$.—**Fig. 3:** lower portion of filament and root, $\frac{91}{1}$.—**Fig. 4:** terminal portion of filament, $\frac{91}{1}$.—**Fig. 5:** constricted portion of filament, $\frac{220}{1}$.

第五圖版

Chlorodesmis Harvey.

まゆはきも屬

みる科

Chlorodesmis comosa Bail. et Harv. in Ner. bor. Amer. III, p. 20.
—Engl. et Prantl. Natürl. Pflanzenfam, p. 141.—J. Ag. Till. Alg. Syst.
Vol. V, p. 50.—*Aurainvillea comosa* Murr. et Bood. (Journ. of Bot.
1899.)—De Toni Syll. Alg. Vol. I, p. 515.

性質. 體ハ圓キ刷毛殊ニ眉掠(マユハキ)ノ如ク短莖ヲ有スルアリ或ハ莖ナクシテ岩石ニ叢生ス; 石灰質ヲ被ルコトナク、叉狀ニ分岐セル絲ヨリ成ル。絲ハ各游離シ、處々括レ、殊ニ分岐點附近ノ括レタル處ハ細胞膜甚シク内部ニ増厚シ之ガ爲ニ原形質ハ僅ニ細キ溝狀腔ヲ通ジテ彼是連絡ス; 然レトモ全體隔膜ヲ存スルコトアラズ。莖(若シ莖ノアルトキ)ハ短クシテ海綿質ヲナシ、游離セル部分ノ糸ノ下部及ビ其側部ヨリ生スル根ノ錯綜シテ成ス所ナリ。游子囊ノ形狀、游走子、及ビ結實ノ方法ハ未詳ナラズ

此屬ハ Harvey 氏ノ創設シタル所ナレドモ爾後同科中ノ *Aurainvillea* Dcne. ト混セラレタリシガ後又別ニ一屬ヲ爲スニ至レリ。 *Aurainvillea* ハ體ヲ形成スル絲游離セズシテ錯綜シ且ツ一體ニ結合シテ扇狀ヲナスヲ以テ異ナリトス。熱帶産ナリ

Chlorodesmis comosa Bail. et Harv.

まゆはきも 新稱

性質. 體ハ無柄又ハ有柄ニシテ高サ 2-7 cm. アリ, 叢生ス. 莖ハ短ク圓柱狀ニシテ 0.5-1 cm. ノ長サヲ有ス. 絲ノ游離部ハ大抵長距離ニ括ルレドモ莖部若クハ下部ニ到レバ密ニ接近シテ稍念珠狀ヲナス; 太サ 61-77-140 μ ナリ. 此クビレノ一ハ必ズ他ノ一ヨリハ高ク, 二個決シテ同一ノ高サニアルコトナシ. 色, 淡綠色, (莖ハ稍灰白色ナリ); 乾燥スルトキハ穠厚ノ綠色ヲ呈ス. 質極メテ柔軟ニシテ紙ニ密着ス.

產地. 潮線間ノ珊瑚礁ニ生ズ 日向油津以南; 琉球; 尖角列島.

既知產地. 琉球; フレンドリー諸島; ヌーカヒバ; フキージー諸島; トンガタブ; ウポル; サモア; ニウカレドニア; ポート, デニソン; ババウ.

第五圖版. 第一圖: 自然ノ狀態, $\frac{1}{1}$.—第二圖: 絲及ビ根, $\frac{16}{1}$.—第三圖: 絲ノ下部及ビ根, $\frac{91}{1}$.—第四圖: 絲ノ上部, $\frac{91}{1}$.—第五圖: 括レタル部分, $\frac{220}{1}$.

學 語 解

學語ハ余ノ日本海藻屬名檢索表及ビ海藻學汎論ニ掲
ゲタルモノ多キヲ以テ其既ニ説明ヲ與ヘタルモノハ茲ニ
除クコト、セリ、

軸, *Axis, Rachis*; 凡テ枝又ハ莖ノ周圍ヨリ多數ノ小
サキ枝若クハ之ニ對スルモノ、生ズルトキハ其之ヲ支持
スル枝又ハ莖ヲ軸ト云フ、

背面, *Dorsal side*; 匍匐スルモノニ於テ其下方ノ側面
即チ他物ニ接シタル側面ヲ腹面ト云ヒ、其反對ノ側面ヲ背
面ト云フ、

長條, *Langtrieb*; 一條ノ枝ノ成長ニ限リナク伸長スベ
キモノヲ云フ、短條ト對照スベシ、

短條, *Kurztrieb*; 一條ノ枝ノ成長僅ニシテ早ク既ニ其
成長ヲ止ムルヲ云フ、故ニ長條ハ伸長シテ更ニ短條ヲ生ズ
レドモ短條ハ更ニ短條ヲ生ズルコトナシ、

全長, *whole length*; 下部ヨリ上部ニ至ルマデノ部分
ヲ云フ、長サヲ云フニアラズ、

直出, *straight*; 眞直ナルヲ云フ、直立ニアラズシテ位
置ノ如何ヲ問ハズ方向ノ直ナルヲ云フ、

早落, *Deciduous*; 其モノ、生ズルヤ後早ク落ルヲ云
フ

(二)

斷續, discontinuous, broken; 四分孢子ナドノ一列ニ連ナラズシテ處々途切レタルヲ云フ。

波皺, undulate; 葉ナド其表面ノ上下ニ波狀ノ皺ヲ有スルヲ云フ, 縁邊ノ波狀ナルト區別シテ用キル。

臍形, umbilicate; 一枚ノ紙ノ如キモノヲ其表面ノ一部ヲツマミタル如キ有様ヲ云フ; 然ルトキハツマミタル部分ヲ上ヨリ見レバ其部ハ少シク凹ミテ臍ノ如クナレバ云フ。

廣開, patent; 枝ノ出デ方ニ用キル語ニテ軸ト枝トノナス角度廣キヲ云フ。

幅狀, radial; 車輪ノ齒ノ如ク中心ヨリ四方ニ放射狀ヲナセルヲ云フ, 時トシテハ放射狀トモ云フ。

楯狀, peltate; 圓キ葉ノ中心ニ柄ノ付キタルヲ云フ, はすノ葉ノ如シ, 然レトモ又其形ノ點ヨリナラズ其付キ方ニモ用キル。

精子器, Antheridia; 精子囊ト同一ナレトモ精子囊トハ一個ノ精子ヲ生スル母細胞ヲ指シ, 精子器トハ精子囊ノ集マレル全體ヲ云フ。

孢子層, Hymenium; 果孢子ガーノ表面ニ密集セルヲ云フ。

覆瓦様, imbricate; 屋上ノ瓦ノ重ナレル如キ有様ヲ云ヘルニテ, 強チ其ノ如ク規則正シカラザルモ多數ノ葉又ハ小枝ガ相接近シテ生ズルトキニ用キル。

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ILLUSTRATIONS
OF THE
MARINE ALGÆ OF JAPAN.

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日本海藻圖說

第一卷第二冊

理學博士岡村金太郎著

ILLUSTRATIONS

OF THE

MARINE ALGÆ OF JAPAN.

Vol. I. No. 2.

BY

K. OKAMURA, *Rigakuhakushi.*

TOKYO.

1901.

KEIGYOSHA & Co.

K. OKAMURA.
ALGÆ JAPONICÆ EXSICCATÆ.

FASCICULUS I.

1. *Nemalion pulvinatum* Grun.
2. *Scinaia furcellata* (Turn.) Bivona.
3. *Brachycladia australis* Sond.
4. *Gelidium divaricatum* Martens.
5. *Gelidium repens* Okam.
6. *Suhria Japonica* Harv.
7. *Acanthopeltis japonica* Okam.
8. *Chondrus elatus* Holmes.
9. *Gigartina tenella* Harv.
10. *Gymnogongrus flabelliformis* Harv.
11. *Callophyllis japonica* Okam.
12. *Callophyllis* (*Microcoelia*) *Chilensis* (J. Ag.)
13. *Gracilaria Textorii* (Suring.) J. Ag.
14. *Hypnea musciformis* (Wulf.) Lamour.
15. *Lomentaria catenata* Harv.
16. *Champia parvula* (Ag.) Harv.
17. *Martensia australis* Harv.
18. *Hemineura Schmitziana* De Toni et Okam.
19. *Delisea pulchra* (Grev.) Mont.
20. *Laurencia dendroidea* J. Ag.
21. *Laurencia paniculata* J. Ag.
22. *Symphyocladia angusta* Okam.
23. *Chondria crassicaulis* Harv.
24. *Digenea simplex* (Wulf.) Ag.
25. *Dasya scoparia* Harv.
26. *Ptilota dentata* Okam.
27. *Ceramium paniculatum* Okam.
28. *Ceramium gracillimum* Griff. et Harv.
29. *Gloiopeltis tenax* (Turn.) J. Ag.
30. *Grateloupia lancifolia* (Harv.) Okam.
31. *Grateloupia acuminata* Holmes.
32. *Grateloupia flicina* (Wulf.) Ag.
33. *Polyopes Polyideoides* Okam.
34. *Prionitis angusta* Okam.
35. *Chondrococcus japonicus* (Harv.)
36. *Cystophyllum fusiforme* Harv.
37. *Pelvetia Babingtonii* (Harv.) De Toni.
38. *Dictyota dichotoma* (Huds.) J. Ag.
39. *Padina arborescens* Holmes.
40. *Haliseris prolifera* Okam.
41. *Haliseris undulata* Holmes.
42. *Colpomenia sinuosa* (Roth.) Derb. et Sol.
43. *Hydroclathrus cancellatus* Bory.
44. *Myclophycus caespitosa* (Harv.) Kjellm.
45. *Letterstedtia Japonica* Holmes.
46. *Cladophora Wrightiana* Harv.
47. *Caulerpa anceps* Harv.
48. *Caulerpa Okamurai* Weber.
49. *Codium mamillosum* Harv.
50. *Codium mucronatum* J. Ag.

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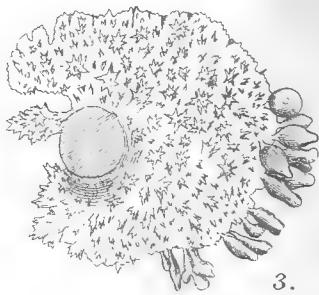
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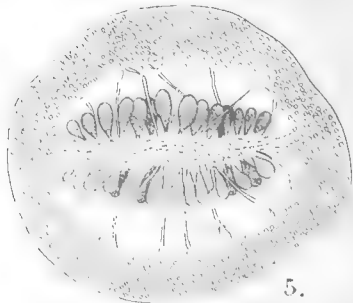
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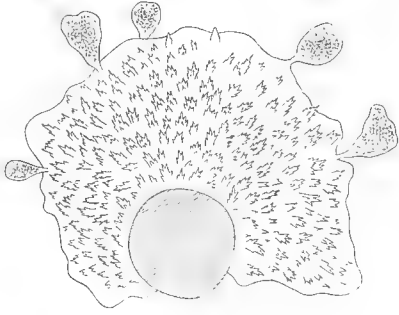
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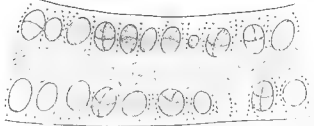
4.



5.



6.



7.



8.



9.



10.

K.Okamura del.

Acanthopeltis japonica Okam.

あひかり

PLATE VI.

Acanthopeltis japonica Okam.

GELIDIACEÆ.

Nom. Jap. *Yui-Kiri*.

Acanthopeltis japonica Okam. (R. Yatabe, Iconogr. Flor. Jap., Vol. I, pt. 2, p. 157-158, Pl. XXXIX.); Schmitz, Klein. Beitr. z. Kenntn. d. Florid. III. p. 19-22; De Toni, Phyc. Jap. Nov., p. 22; Id. Syll. Alg. Vol. IV, p. 168; Schmitz. et Hauptfl. in Engl. et Prantl. Natürl. Pflanzenfam., p. 349, fig. 213; Okam. Alg. Jap. Exsic., Fas. I, No. 7.—*Castraltia salicornoides* in Martens Preus. Expedit. n. Ost-Asien, Tange, P. 117 et 130.—*Schottmüllera paradoxa* Grunow, 1889 (Nomen nudum) in Schmitz, Syst. Übers. d. bish. bekannt. Gattung. d. Florid. p. 6.

Descr.: Root fibrous, branched; some of the branches expanding into a small disk at the apex. *Fronde* terete, provided with thick and stout stem below, gradually narrowed above, much branched in an alternate or somewhat dichotomous manner, 5-20 cm. high, 2-3 mm. thick in the broadest portion. All the segments, except the basal denudated portion, are closely covered with disk-shaped, suborbicular ramuli which grow out one-sided. *Ramuli* thick, about 3 mm. broad, somewhat spiral in the order of insertion, amplexicaul at the base; repand or irregularly crenulate at the margin, with simple or branched setaceous processes on both surfaces; some of the ramuli expand, in place of assuming the normal form, into short-pedicelled leaf-like phyllodia which are oblong or roundish, either smooth or muricated, 3-7 mm. long or more, 2-4 mm. broad. In some forms, almost all ramuli are transformed into such phyllodia showing abnormality, as it is shown in

a branch on the right of the fig. I. *Tetraspores* formed in dilated processes near the margin of ramuli. *Cystocarps* roundish oval, produced in the marginal setae. *Colour* deep red. *Substance* stiff cartilaginous and harsh to the touch.

Hab. On rocks below low tide; Hiuga, Susaki (Tosa), Shima, Cape Irako (Mikawa), Tōtōmi, Sagami, Bōshū, Kadzusa. *Cystocarps* and *tetraspores*: August—October.

Acanthopeltis japonica, a species peculiar, as far as it is known, to this country, is distinguished from all the allied plants of the subfamily *Gelidiæ* on account of its peculiar mode of growth by proliferating short-pedicelled, disk-shaped, peltate ramuli from the base of the uppermost ramuli. Another remarkable plant which I have established as a new genus, *Yatabella*, and have illustrated in Plate I, has so close resemblance with *Acanthopeltis* in its external appearance in having multifid-echinate ramuli which are inserted in peltate manner, that I took it as a new species of *Acanthopeltis*, when I first collected it at the province of Hiuga. Besides its external resemblance, both genera have their *cystocarps* as well as *sporophylls* bearing *tetraspores* equally produced from the spines of ramuli. But, *Yatabella* grows in a monopodial manner, as I have already stated under that genus.

The present plant grows abundantly in the warmer parts of our Pacific coast, extending from the southern part of Kiushiu to the Cape Inuboye, but is not yet known in Riukiu Islands as well as in the coast of Japan sea. This alga is rarely free from the covering of sponges, bryozoa, sand and various kinds of calcareous algae to such an extent that it is often taken as something else than alga.

Plate VI. **Fig. 1:** plant in nat. state and size.—**Fig. 2:** portion of the cross-section of frond $\frac{230}{1}$.—**Fig. 3:** ramulus bearing cystocarps, seen from the undersurface, $\frac{8}{1}$.—**Fig. 4:** cystocarps, $\frac{22}{1}$.—**Fig. 5:** cross-section of a cystocarp, magd.—**Fig. 6:** ramulus bearing tetrasporic sporophylls, seen from the undersurface, magd.—**Fig. 7:** cross-section of a tetrasporic sporophyll, $\frac{230}{1}$.—**Fig. 8:** apical portion of frond showing the synpodial mode of growth, slightly magd.—**Fig. 9:** portion of a branch showing ramuli *in situ*, $\frac{8}{1}$.—**Fig. 10:** diagrammatic cross-section of a ramulus showing setaceous processes on both surfaces, magd.

第 六 圖 版

Acanthopeltis Okam.

ゆ ひ き り 屬

て ん ぐ さ 科

性質. 體ハ下部圓柱狀ノ莖ヲナシ, 上部ハ屢々互生様叉狀ニ分岐シ, 密ニ重疊セル圓形盤狀ノ小枝ヲ以テ蔽ハル. 小枝ハ殆ド水平ニ開張シ, 緣邊不規則ニ鋸齒ヲナシ又波狀ヲナス, 而シテ兩面ヨリ鈍頭ナル若クハ刺狀ニシテ分岐セル小突起及ヒ刺ヲ無數ニ生ズルガ爲ニ面甚ダ粗糙ナリ; 其肉厚ク, 基部莖ヲ抱キ, 莖ハ其中心ヲ外レテ通ズ. 軸ノ伸長スル方法ハ軸ノ最上部ヲナセル小枝ノ基部ヨリ, 圓形ニシテ短柄ヲ有スル小枝ヲ生ズルニ依テ伸長ス, 故ニ聯基的伸長ナリ. 體ノ造構ハ二層ヨリ成ル; 内層ハ緻密ニ聚集錯綜セル纖維ヲ以テ成リ, 外層ハ一二列ノ紅色ナル小細胞ヲ以テ成ル. 囊果ハ二室ニシテ小枝ノ緣邊ナル, 刺狀突起ノ上端卵圓形ニ膨大セル部分ノ内ニアリ; 其造構ハてんぐさ屬ニ同シ. 四分孢子群ハ小枝ノ緣邊ナル, 刺狀突起ノ上部, 開張セル部分ノ兩面ニ生ジ, 十字様ニ分裂ス.

Acanthopeltis japonica Okam.

ゆ ひ き り. 岡村 稱

異稱: とりあし(商家); かぼちや, だいなにかぼちや(房州).

Acanthopeltis japonica Okam. 矢田部, 日本植物圖解, 第一冊, 第二號, 157-160 頁(第三十九圖版); Schmitz, Klein. Beitr. z. Kenntn.

d. Florid., III. p. 19-22; De Toni Phyc. Jap. Nov., p. 22; Id. Syll. Alg. Vol. IV, p. 168; Schmitz et Hauptfl. in Engl. et Prantl, Natürl. Pflanzenfam., p. 349, Fig. 213; 岡村, 日本海藻標品, 第一帙, 第七.—*Castraltia salicornoides* in Martens Preus. Exped. n. Ost-Asien, Tange, p. 117 et 130.—*Schöttmüllera paradoxa* Grunow, 1889, (名稱ノミ) in Schmitz, Syst. Übers. d. bish. bekannt. Gattung d. Florid. p. 6.

根ハ纖維根ニシテ分岐シ, 其先端或ハ小盤狀ニ開張ス。體ハ圓柱狀ニシテ下部圓ク堅牢ナル莖ヲ有シ, 上部ハ細ク屢々互生様叉狀ニ分岐ス; 高サ 5-20 cm., 幅 2-3 mm. アリ。枝ハ密ニ重疊セル盤狀ノ橢圓形ナル小枝ヲ以テ蔽ハレ, 其之ナキ所ハ只體ノ下部若クハ其脫落シタル部分ノミナリ。小枝ハ厚ク凡 3 mm. ノ幅ヲ有シ, 軸ノ一方ニ開張シ, 稍螺旋狀ニ配置セラレ, 基部莖ヲ抱ク; 緣邊ハ不規則ナル鋸齒若クハ小波狀ヲナシ, 兩面ヨリ單條又ハ分岐セル刺狀突起ヲ密生ス; 小枝ハ時トシテハ圓形盤狀ヲナサズシテ細長キ若クハ稍圓キ葉狀ノ枝ニ伸ビ, 短柄ヲ有シ, 其面平坦若クハ小突起ヲ存シ, 3-7 mm. ノ長サニ達シ, 2-4 mm. ノ幅ヲ有ス。或標品ニテハ, 小枝ハ殆ド皆異常ヲ呈シテ, 斯ノ如キ葉狀ノ枝ニ變ズルコト, 第一圖ノ右側ノ枝ニ示シタルガ如キコトアリ。四分胞子及ヒ囊果ハ圓形ノ小枝ノ緣邊ニアル刺狀突起ニ生シ; 四分胞子ハ此等突起ノ上部展開セル部分ニ密集シ; 囊果ハ球狀若クハ卵圓形ニシテ少シク扁ク鈍頭ナリ。濃紅色。質硬ク軟骨質ニシテ, 粗糙ナル觸覺ヲ感ゼシム。

產地。低潮線以下ノ岩石ニ生ズ。日向, 須崎(土佐), 志摩, 伊良湖岬, 遠江, 相模, 房州, 上總。【囊果及四分胞子: 八一十月。

ゆひきりハ元ト志洲ノ方言ニシテ枝ニ小枝ノ重疊スル
 狀恰モ結ヒ切リタルガ如シト云フニ基ヅク；其頗ル雅ナル
 ガ故ニ取リテ學名トハシタリ。余ノ此海藻ヲ新屬トシテ世
 ニ公ニセザリシ前、既ニ已ニ歐洲ニ於テ知ラレ居タルニモ拘
 ハラズ、余ノ設ケタル屬名ガ採用セラル、ニ至レル顛末ハ植
 物學雜誌第七十八號 233 頁(明治二十六年)ニ載セタル *Acan-*
thopeltis japonica ニ就テト云ヘル論文ニ精シ。

ゆひきりハ本邦特産ノ海藻ニシテ、其奇異ナル聯基的伸
 長ノ關係ヨリてんぐさ科ノ亞科 *Gelidicæ* ニ屬スル諸多ノ海
 藻ト區別セラル；而シテ昨年余ガ日向ニ於テ始メテ發見シ
 タル新屬、*Yatabella*、ハ既ニ本圖說第一圖版ニ於テ記載シタ
 ル如ク枝ノ周圍ヨリ楕狀ニ配置セル多尖裂ノ小枝ヲ密生ス
 ル點ニ於テ甚ダゆいきりニ酷似シ、其類似ノ點ハ實ニ外形ノ
 相類スルニ止マラズシテ、囊果及ヒ成實葉(四分孢子ヲ生ズル)
 ガ兩者共ニ小枝ノ刺狀突起ヨリ生ズル點ニ於テモ亦然リト
 ス。是ニ依テ余ハ之ヲ日向ニ採集シタル時、心竊カニ *Acan-*
thopeltis ノ一新種ヲ得タリト悦ベリ；圖ラザリキ *Yatabella* ハ
 其伸長ノ方法聯基ナラズシテ單基ナラントハ。此故ヲ以テ
 余ハ之ヲ新屬トシタルナリ。

本植物ハ我太平洋沿岸溫暖部ニハ多額ニ產出シ、九州ノ
 南部ヨリ犬吠岬附近マテ之ヲ見ル；然レドモ未ダ琉球諸島
 及ビ日本海沿岸ノ產アルヲ知ラス。此海藻ハ常ニ海綿類、蘇
 虫類、砂粒及ビさんご類ノ海藻ノ附着スル所トナリ、其之ナ
 キハ殆ド稀ナルガ如シ；是カ爲ニ往々本體ヲ隱蔽シテ海藻
 ナラザルガ如ク見ユルコトアリ。本植物ハ凍瓊脂製造ノ原
 料トシ商賈盛ニ販賣ス。

第六圖版. **第一圖:** ゆひきりノ自然ノ状態, $\frac{1}{1}$.—**第二圖:** 體ノ横斷面ノ一部, $\frac{230}{1}$.—**第三圖:** 囊果ヲ生シタル小枝ヲ裏面ヨリ見タル狀, $\frac{8}{1}$.—**第四圖:** 囊果, $\frac{22}{1}$.—**第五圖:** 囊果ノ横斷面, 廓大.—**第六圖:** 四分胞子ヲ有スル成實葉ヲ生シタル小枝ヲ裏面ヨリ見タル狀, 廓大.—**第七圖:** 四分胞子ヲ有スル成實葉ノ横斷面, $\frac{230}{1}$.—**第八圖:** 體ノ頂端ヨリ小枝ノ聯基的ニ生ズル狀ヲ示ス, 廓大.—**第九圖:** 枝ノ一部ニシテ小枝ノ自然ノ有様ヲ示ス, $\frac{8}{1}$.—**第十圖:** 小枝ノ横斷面ノ型式ニシテ兩面ヨリ刺狀突起ヲ生ズル狀, 廓大.



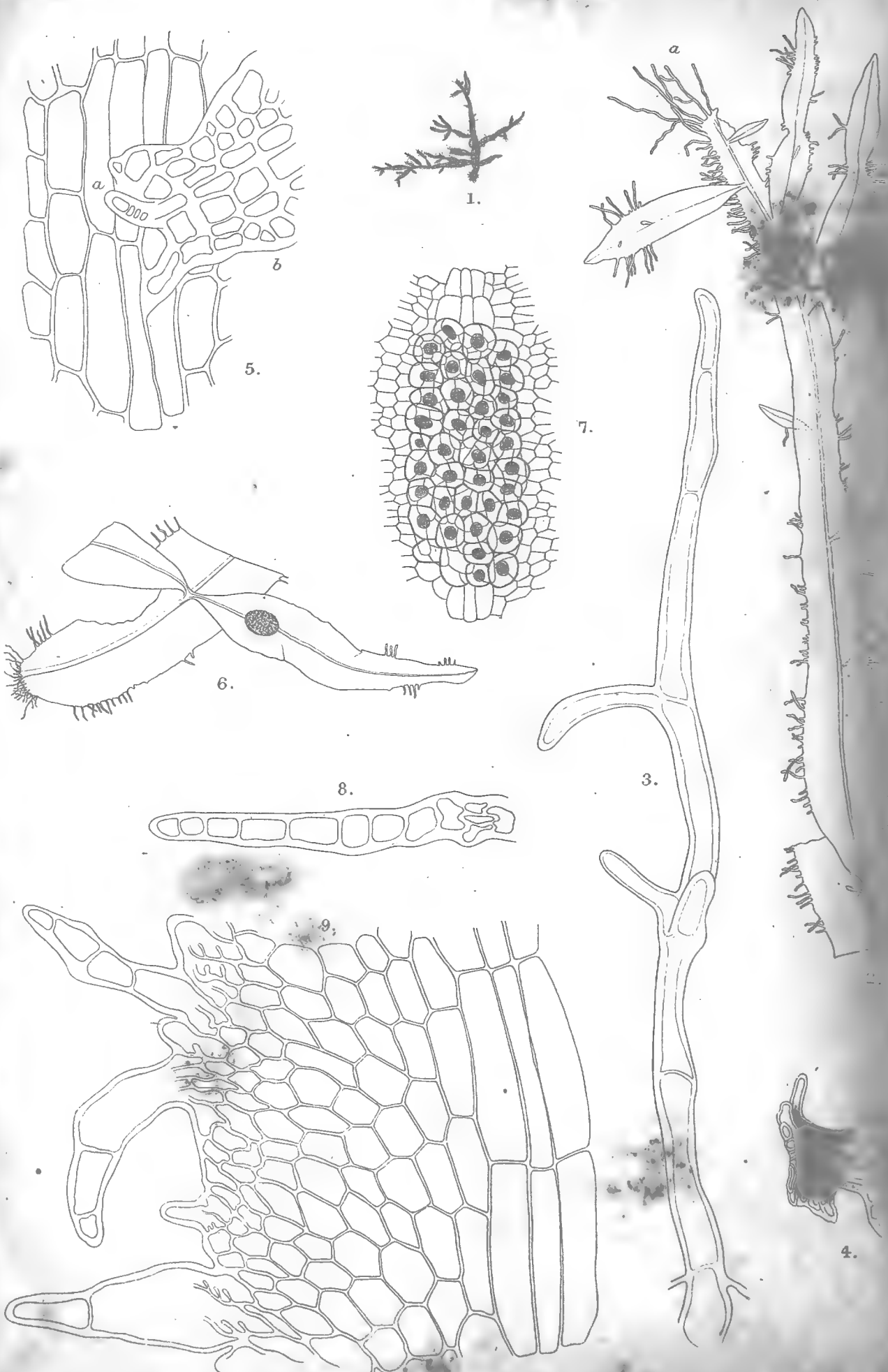


PLATE VII.

Hypoglossum barbatum Sp. Nov.

DELESSERIACEÆ.

Nom. Jap. *Hige-beniha-nori*.

Diagn. : *Fronde* perhaps decumbent, narrow, linear-lanceolate, tapering to both ends, branching by repeatedly proliferating similar segments from the midrib on both surfaces. *Proliferations* alternate, but sometimes take apparently opposite arrangement. *Midrib* slender, jointed at short intervals, consisting of ecorticated three oblong cells, and destitute of veins. *Marginal cells* irregularly reticulated and give rise to root-like, jointed, simple or branched, fibres by fusion of two or more cells. *Sori* oblong, borne on the midrib. *Cystocarps* unknown.

Hab. Hiuga.

Descr. Only one small specimen has been found among marine detritus. The *plant* seems to grow at first decumbent and subsequently erect, judging from the presence of marginal root-like fibres. The *frond* is linear-lanceolate, destitute of veins, tapering towards both ends. From the midrib of the primary frond repeatedly spring the leaflets of similar form, and their midrib emits others; the plant thus branches out by repeated proliferous growths from both surfaces, and the older portion seems to disappear, as the basal extremity of the frond is rounded and furnished with secondarily formed root-fibres (Fig. 6). The *proliferations* are single along the midrib, but here and there two of them grow so as to appear to oppose one another at the same point. This apparently opposite arrangement of leaflets,

however, is due to the growth of lesser sort from the base of the antecedent proliferation, and is not strictly, so to speak, dichotomous or opposite ramification. The *midrib* is very slender, composed of three oblong cells in surface-view, jointed at short intervals, and ecorticated. *Marginal portion* of the frond consists of somewhat reticulated cells, the remaining being tessellated as it is the case in other species of the genus. Along the margin, rather thick, jointed, simple or slightly branched, root-like fibres interruptedly arise in abundance, leaving the interval portion entire. They are formed either from the prolongation of a single marginal cell, or by fusion of three or more of them, and are often abundantly emitted from the apical portion of, or from slightly constricted part of the segments. Besides these root fibres, there is found a scutate disk as shown in the fig. 4. *Sori* of tetraspores are oblong, borne on the midrib of a leaflet, being produced by the confluence of linear ones formed along both sides of the midrib, and are lodged below the half way of the entire length of the sporophylls bearing sori. *Cystocarps* unknown at present. *Colour* is clear rosy-red. *Substance* thin and delicate.

Affinity which the present plant has with *Hypoglossum spathulatum* (Kütz?) J. Ag. is beyond any doubt; but, in that plant, there is no marginal root-fibres. The apparently dichotomous arrangement of proliferations in the plant in question makes us to remind that of *Hypoglossum dendroides* (Harv.) J. Ag., in which proliferations are always dichotomous, while in the present plant such arrangements are only occasional and apparent.

Plate VII. **Fig. 1**: plant in nat. size.—**Fig. 2**: portion of frond, $\frac{33}{1}$.—**Fig. 3**: root-like fibre, marked *a* in Fig. 2, $\frac{20}{1}$.—**Fig. 4**: disk-shaped root produced from margin of frond, $\frac{115}{1}$.—

Fig. 5: surface-view of the median portion of frond showing the base of an older leaf, *b*, proliferating another one, *a*, $\frac{22^0}{1}$.—**Fig. 6:** sporophyll bearing sorus, $\frac{33}{1}$.—**Fig. 7:** surface-view of the sorus, $\frac{9^0}{1}$.—**Fig. 8:** half of the cross-section of frond, $\frac{22^0}{1}$.—**Fig. 9:** surface-view of the frond to show the marginal reticulation of cells and root-like prolongations, $\frac{22^0}{1}$.

第七圖版

Hypoglossum Kützing.

べにはのり屬

このはのり科

性質. 體ハ葉狀ニシテ中肋ヲ存シ, 中肋ヨリ同様ノ部分ヲ發出シテ分枝スル外, 各部分ルヽコトナク, 顯微鏡的細微ノ側脈ヲ存スルコトナシ; 質薄弱ニシテ, 中肋ヨリ左右兩縁ノ方ニ斜ニ規則正シク並列セル細胞ニヨリテ體ヲ構成ス. 嚢果ハ中肋ニ坐ス. 四分胞子群ハ小葉ニ生ジ, 其中肋ノ兩側ニ各一群ヲナス, 而シテ其之ヲ生ズル小葉ハ他ノ部ト少シモ變ラザルカ, 若クハ稍異ナリタル形狀ヲ有ス.

此屬ハ Kützing 氏ノ 1843 年ニ創設シタル所ナレドモ, 爾來諸多ノ學者之ヲ *Delesseria* 屬中ニ收メ或ハ *Delesseria* 屬ノ一亞屬トセルモアリ; 近來 J. Agardh 氏ハ專ラ四分胞子群ノ性質ヨリ之ヲ別屬トナセリ, 乃チ *Delesseria* 屬ニアリテハ四分胞子群ハ特異ノ小葉ニ生ズルコトナク種々ニ相集レドモ, 此屬ニテハ專ラ特異ノ小葉ニ生ズト云フニアリトス. 本屬ノ植物ハ專ラ「ニウホルランド」ニ産スルモノ多ク, 「フロリダ」及地中海, 大西洋ノ溫暖部ニ生スルモノ二三種アリ.

Hypoglossum barbatum Sp. Nov.

ひげべにはのり 新種.

性質. 體ハ始メハ多分平臥シ後斜上スルモノナルベシ;

狹長, 細披針狀ニシテ兩端ニ細瘠シ, 中肋ノ兩面ヨリ同様ノ形セル枝ヲ發スルコト數回反覆シテ以テ分岐ス。中肋ヨリ發スル枝ハ互生ナレトモ時トシテハ外見上對生ノ如キ配置ヲナスコトアリ。中肋ハ細ク, 短距離ニテ關節シ, 表面ヨリ見ルトキハ三個ノ細長キ細胞ヨリ成レルガ如ク, 皮層細胞ヲ被ムルコトナク, 又側脈ヲ存スルコトナシ。縁邊ノ細胞ハ不規則ニ網狀ヲ呈シ, 其二乃至數個ノ細胞ノ癒合ニヨリテ根ノ如キ糸狀體ヲ生ズ; 此糸狀體ハ關節糸ヨリ成リ單條又ハ分岐ス。四分孢子群ハ中肋上ニアリテ長橢圓形ヲナス。囊果ハ未詳。

產地。日向。

只一個ノ小ナル標品ヲ採集品中ニ發見シタルノミナリ本植物ハ始メ平臥シ後斜上若クハ直立スルモノ、如シ; 其ハ體ノ縁邊ニ根ノ如キ糸狀體ノ存スルニ依テ爾ク判斷スルナリ。體ハ細披針狀ニシテ側脈ナク, 兩端ニ細瘠ス; 其分岐成長ノ方法ハ最初ノ體ノ中肋ヨリ同様ノ形狀ヲナセル小葉ヲ發出シ, 其中肋ヨリ更ニ又同様ノ體ヲ發シ, 斯クシテ數回ニ及ビテ體ノ兩面ヨリ分岐ス; 而シテ老成部ハ漸々枯朽スルモノ、如シ; 何トナレバ體ノ基端ハ圓形ヲナシ後其部ヨリ生ジタル根ヲ存スレバナリ(第六圖)。中肋ヨリ生ズル小葉ハ概チ一列ナレドモ, 其處此處ニ對生ノ如ク同一箇所ヨリ生ズルモノアリ。斯ク對生ノ如ク見ユルモノハ其實眞ノ對生ニハアラデ, 一箇所ヨリ出タル一小葉ノ基部ヨリ更ニ他ノ小葉ヲ生ズルニ基スルガ故ニ, 中肋ノ左右兩側ヨリ生ジタル眞正ノ對生若クハ叉狀分岐トハナスベカラズ。中肋ハ極メテ細ク, 之ヲ

表面ヨリ見ルトキハ三個ノ細長キ細胞ヨリ成リ、短距離ニ於テ關節シ、皮層細胞ヲ被ムルコトナシ。體ノ兩緣部ハ稍網狀ノ如ク配列セル細胞ヨリ成リ、其他ノ部ノ細胞ハ此屬ノ諸種ニ於ケル如ク規則正シク配置セラル。體ノ緣邊ニ沿フテ所々ニ單條若クハ稍分岐セル毛狀根ヲ叢生シ、其根ナキ間ノ部分ハ全緣ナリ；而シテ根ハ關節糸ヨリ成リテ稍太ク、緣邊ナル一個ノ細胞伸長シテ以テ成ルアリ、或ハ三個若クハ數個ノ細胞癒合シテ之ヲ生ズルアリテ、各枝ノ頂端ヨリ多數ニ出デ、又ハ各部ノ少シククビレタル部分ヨリ叢生ス；此等毛狀根ノ外ニ吸盤狀ノ根ヲ生スルコトモアリ。四分孢子群ハ中肋ノ兩側ニ線狀ニ集リタルモノ、合一スルガ爲ニ長橢圓形ヲナシ中肋上ニアリ、而シテ其之ヲ生スル小葉ノ長サノ半分ヨリ下ノ部分ニ生ス。囊果ハ詳ナラズ。鮮紅色。質、薄弱ナリ。

本植物ガ *Hypoglossum spathulatum* (Kütz?) J. Ag. ト密接ナル類縁ヲ有スルコトハ疑ヲ容レズ；然レドモ此植物ニハ緣邊ヨリ毛狀根ヲ生スルコトアラズ。本植物ニ於テ中肋ヨリ發出スル部分ガ外見上叉狀ノ如キ配置ヲナスモノアルガ爲ニ *Hypoglossum dendroides* (Harv.) J. Ag. ヲ想起セシムレドモ、此植物ニ於テハ分岐常ニ明ニ叉狀ニシテ、本植物ノ如ク只折々外見上叉狀ノ如ク見ユルモノアルト異ナリトス。

第七圖版。第一圖：ひげべにはのり、 $\frac{1}{1}$ 。—第二圖：體ノ一部、 $\frac{33}{1}$ 。—第三圖：第二圖ノ *a* ト記シタル根ノ如キモノ、 $\frac{220}{1}$ 。—第四圖：體ノ緣邊ヨリ生ズル盤狀根、 $\frac{115}{1}$ 。—第五圖：體ノ中央

二六

部ノ表面ヲ廓大シテ其中肋ヨリ生ジタル一小葉 b ノ基部ヨリ更ニ他ノ小葉 a ヲ生ズル狀, $\frac{220}{1}$.—**第六圖**: 四分孢子群ヲ有スル小葉, $\frac{33}{1}$.—**第七圖**: 四分孢子群ヲ表面ヨリ見タル狀, $\frac{90}{1}$.—**第八圖**: 體ノ横斷面ノ半分, $\frac{220}{1}$.—**第九圖**: 體ノ表面ヲ廓大シテ縁邊ノ細胞ノ網狀ニ配置セラレタル狀ト根ノ如キ突起ヲ生ズル狀トヲ示ス, $\frac{220}{1}$.



Okamura, del.

Hemineura schmitziana de Toni et Okam.

PLATE VIII.

Hemineura Schmitziana de Toni et Okam.

DELESSERIACEÆ.

Nom. Jap. *Habutaye-nori*.

Hemineura Schmitziana de Toni et Okam., Neue Meeresalg. aus Jap., p. 76, Taf. XVI, fig. 6-12 (Ber. Deuts. Bot. Gesellsch., 1894, Bd. XII.); de Toni Phyc. Jap. Nov., p. 29; Id., Syll. Alg., Vol. IV, p. 720; Okam. Alg. Jap. Exsic., Fasc. I, No. 18.

Frond solitary, adhering to substratum by roots which are either disk-shaped or branched monosiphonous filaments and produced from margin and under-surface, membranaceous, bi-tripinnate, faintly midribbed, without lateral veins, 10-15 cm. high, tapering below to a short compressed stipe in an adult frond. *Segments* lanceolate, broadly acute or roundish at apices, 0.6-1.5 cm. in breadth, usually narrowed at the base, patent, with rounded axils. *Margin* irregularly fimbriated with larger or smaller leaflets which either grow into sporophylls or remain as sterile. Very rarely leaflets proliferate from the midrib. *Tetraspores* forming a dense sorus on each side of the midrib of sporophylls. *Cystocarps* subhemispherical and slightly oblique, sitting on the midrib of sporophylls, with a small terminal pore pointing upwards and towards the apex of sporophylls. *Colour* rosy-red. *Substance* thin membranaceous, and the plant adheres to paper in drying.

Hab. On rocks perhaps at low tide. Isé, Eno-Shima and Misaki (Sagami), Bōshū, Kadzusa, Iwaki. Tetraspores and Cystocarps—Summar.

“Diese schöne Art, welche zu Ehren des Professor Dr. F. Schmitz benannt wird, ist am nächsten verwandt mit *Hemineura frondosa* Hook. et Harv. (vergl. Harv. Nereis Australis, p. 116, tab. XLV, *Delesseria frondosa* Harv. Phyc. Austral., tab. 179), wie Professor Schmitz mir mitgeteilt hat. Die Cystocarprien der Harvey'schen Art sind, wie aus der Diagnose hervorgeht, am Scheitel hornförmig verlängert. Bei *Hemineura Schmitziana* sind die fruchtführenden Blättchen (Sporophylla) sehr gut differenzirt, während dies bei *Hemineura frondosa* H. et H. nicht zu sehen ist; auch sind bei *Hemineura frondosa* die primären Rippen dicker als bei *Hemineura Schmitziana*; die wahrscheinlich zur Gattung *Hemineura* gehörende *Delesseria cruenta* Harv. Fl. Nov. Zel. p. 240 habe ich nicht prüfen können, und kann ich nicht entscheiden, ob und wie dieselbe von der hier beschriebenen neuen Art verschieden ist; die neuseeländische Art hat (wie aus der Diagnose in J. Ag. Sp. III (1876), p. 485 hervorgeht) ganze Ränder.”—De Toni et Okam. l. c.

Plate VIII. **Fig. 1:** Plant bearing tetraspores in nat. state and size.—**Fig. 2:** disks and fibrous roots formed in a young frond, $\frac{8}{1}$.—**Fig. 3:** margin of frond, $\frac{220}{1}$.—**Fig. 4:** root-fibres, $\frac{220}{1}$.—**Fig. 5:** midrib, $\frac{220}{1}$.—**Fig. 6:** cross-section of frond, $\frac{230}{1}$.—**Fig. 7:** growing apex of frond, $\frac{220}{1}$.—**Fig. 8:** sporophyll bearing tetraspores, $\frac{30}{1}$.—**F. 9:** tetraspores, $\frac{230}{1}$.—**Fig. 10:** sporophyll bearing a cystocarp, slightly magd.—**Fig. 11:** vertical section of a cystocarp, cut along the midrib, slightly magd.—**Fig. 12:** longitudinal section of a cystocarp, $\frac{38}{1}$.—**Fig. 13:** spore-filaments, $\frac{230}{1}$.

第八圖版

Hemineura Harvery.

はぶたへのり屬

このはのり科

性質. 體ハ扁平,葉狀ニシテ薄ク,羽狀ニ分枝ス;即チ體ノ兩緣羽狀裂片ヲ有シ又ハ羽狀ニ分裂シ,其裂片ハ後同一ノ形狀ヲナセル枝トナリ伸長ス;各部ノ枝ハ中央ニ一條ノ中肋ヲ有シ;中肋ハ上方ニ細ケレドモ其部ノ頂端ニ達ス,然レドモ中肋ノ下部ハ不明ニシテ其枝ノ生ジタル部分ノ中肋ト連絡セズ. 成長點ハ横ニ關節セル頂細胞ヲ有ス. 體ノ造構ハ元來規則正シク網狀ニ配置セル細胞層ヨリ成レトモ,後此細胞表面ニ並行シテ分裂シ以テ皮層ヲ形成スルガ爲ニ原來ノ網狀配置ハ外面ヨリ見ルトキハ明ナラズ. **四分孢子群**ハ圓形ヲナシ羽狀裂片ノ緣邊ニ沿フテ中肋ノ兩側ニ群集ス. 囊果ハ中肋ニ坐シ各羽狀裂片ニ一個若クハ二個ヲ生ジ,頂端少シク突出ス;胎座ハ僅ニ形成セラル;成胞糸ハ上方ニ球狀ニ隆起シ,著シク(殆ド球狀ニ)擴大シタル中心細胞ヲ有シ,其表面平坦ナラズシテ凹凸ヲナシ,之ヨリ多數ノ孢子ヲ形成スル糸ヲ四方ニ發出ス;此糸ノ下部ハ小細胞ヨリ成リ,僅ニ分枝シ,上部ハ各關節殆ド同時ニ孢子ニ成熟スベキ絲ヲ成ス;孢子ハ此絲ノ上端ニ生ズ.

此屬ハ *Delesseria* 屬ト近キ類縁ノモノニシテ或ハ *Delesseria* 屬中ニ收メラレタルコトアレドモ,各部ノ中肋彼是相連絡セザル點ヨリ別屬トナスヲ宜シトス. 此屬ニ屬スル植物

ハ從來「ニウホルランド」ニ一二種知ラレタルノミニシテ本邦ニハ只此一種アルノミ。

Hemineura Schmitziana de Toni et Okam.

はぶたへのり 新稱

Hemineura Schmitziana, de Toni et Okam., Neue Meeresalg. aus Jap. p. 76, Taf. XVI, fig. 6-12. (Ber. Deuts. Bot. Gesellsch., 1894, Bd. XII); de Toni Phyc. Jap. Nov., p. 29; Id., Syll. Alg., Vol. IV, p. 720; 岡村, 日本海藻標品第一帙, 第十八.

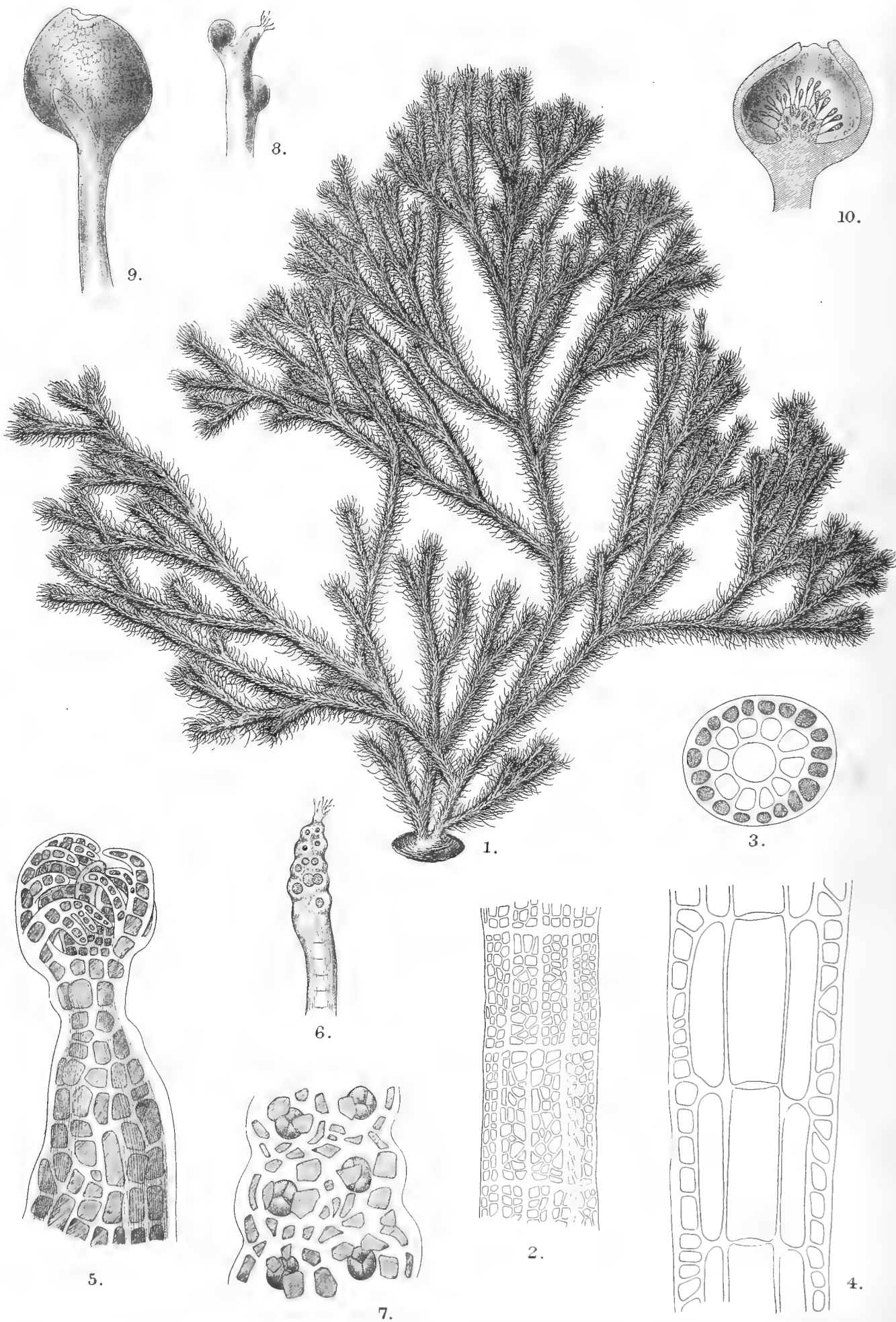
體ハ單獨ニシテ盤狀若クハ分岐セル單管糸狀ノ根ヲ以テ他物ニ付着シ, 根ハ體ノ緣邊並ニ裏面ヨリ生ズ; 而シテ體形ハ葉狀, 膜質ニシテ再三羽狀ヲ成シ, 微カニ中肋ヲ存シ, 側脈ヲ缺ク, 其充分成長シタルモノニアリテハ體ノ下部短キ扁壓セル莖ヲナス, 高サ 10-15 cm. アリ. 各部披針狀ニシテ頂端廣キ銳角ヲナシ又ハ鈍圓ナリ, 幅 0.6-1.5 cm. ニシテ基部通常狹ク, 廣開シ, 圓キ葉腋ヲ有ス. 緣邊ハ大小ノ小葉ヲ以テ, 不規則ニ總ヲ付シタルガ如ク, 小葉ハ或ハ成實葉トナリ或ハ枝トナル; 而シテ小葉ノ中肋ヨリ生ズルコトハ稍稀ナリトス. **四分孢子**ハ成實葉ノ中肋ノ兩側ニ密集スル群ヲナス. **囊果**ハ成實葉ノ中肋上ニ坐シ稍斜ナル半圓形ヲナシ, 果孔ヲ成實葉ノ頂端ノ方ニ向ケ且ツ上方ニ向ク. 鮮紅色. 質薄クシテ膜質; 乾燥スルトキハ臺紙ニ密着ス.

產地. 多分ハ低潮線以下ノ岩石ニ生スルナルベシ. 伊勢, 相模, 房州, 上總, 磐城. **四分孢子及囊果一夏季.**

“此鮮美ナル海藻ハプロフエスソル, ドクトル, シュミツツ氏ノ名譽ノ爲ニ命ジタル種類ニシテ「ニウホルランド」ニ産スル *Hemineura frondosa* Hook. et Harv. ニ最モ近キ類縁ヲ有スルコトハシュミツツ氏ノ余ニ通信シ來レル所ナリ。 *Hemin. frondosa* ノ囊果ハ其上端ニ於テ嘴狀ニ突出セル果孔ヲ有スルコトハハーバー氏ノ記載ニ依リテ明カナリ; 而シテ *Hemin. Schmitziana* ニアリテハ成實葉ハ明ニ他ノ小葉ト異ナリテ存スレトモ *Hemin. frondosa* ニアリテハ此區別明カナラズ。又 *Hemin. frondosa* ニテハ體ノ第一部ノ中肋ハ *Hemin. Schmitziana* ノモノヨリハ太シ。次ニ多分 *Hemineura* 屬ニ屬スベキ *Deleseria cruenta* Harv. ハ如何ニ本種ト異ナレルカハ今之ヲ詳ニセザレドモ *J. Ag. Sp. III* (1876) p. 485 ニアル此種ノ記載ヨリ考フレバ此「ニウジーランド」ノ種類ハ全縁ヲ有スルガ故ニ本種ト異ナレルモノ、如シ”—De Toni et Okam. l. c.

第八圖版. 第一圖: 四分孢子ヲ有スル體ノ自然ノ狀態, $\frac{1}{1}$.—第二圖: 幼キ體ニアル付着器ヲ示ス, $\frac{8}{1}$.—第三圖: 體ノ縁邊, $\frac{220}{1}$.—第四圖: 毛狀根, $\frac{220}{1}$.—第五圖: 中肋, $\frac{220}{1}$.—第六圖: 體ノ横斷面, $\frac{230}{1}$.—第七圖: 成長點, $\frac{220}{1}$.—第八圖: 四分孢子ヲ有スル成實葉, $\frac{30}{1}$.—第九圖: 四分孢子, $\frac{230}{1}$.—第十圖: 囊果ヲ有スル成實葉, 廓大.—第十一圖: 成實葉ノ中肋ニ沿フテ切リタル囊果ノ縦斷面, 廓大.—第十二圖: 囊果ノ縦斷面, $\frac{38}{1}$.—第十三圖: 孢子糸, $\frac{230}{1}$.





K.Okamura del.

Digenea simplex (Wulf.) Ag.

PLATE IX.

Digenea simplex (Wulf.) Ag.

RHODOMELACEÆ.

Nom. Jap. *Makuri*, *Kaininsō*.

Digenea simplex J. Ag. Sp. II, p. 845; Hauck Meeresalg. p. 215, fig. 93; De Toni Phyc. Jap. Nov. p. 32; Heydr. Beitr. Algenfl. Ost Asien, p. 296; Harv. Ner. Bor. Amer., II, p. 30, Tab. XIII. D; Schmitz et Falkenb. in Engl. et Prantl Natürl. Pflanzenfam., p. 437, fig. 245; Okam. Alg. Jap. Exsic. Fasc. I, No. 24.—*D. Wulfeni* Kütz. Phyc. Gener., p. 433, Tab. 50, II; Id. Sp. Alg., p. 841.—*Fucus Lycopodium* Turner Fuci, t. 199.—*Cladostephus Lycopodium* J. Ag. Sp. I, p. 42.

*Fronde*s coespitose, rising from an expanded disk, cylindrical, 2–3 mm. thick, 5–25 cm. high, irregularly branched in an alternato-dichotomous manner, with segments between erect and patent, of equal height in some specimens, in others one much longer than the other; the whole frond, except denuded base, is everywhere thickly covered with a profusion of very patent, filiform, simple or sometimes sparingly branched, harsh, ramuli of the thickness of 80–150 μ and of the length of 5–10 or sometimes 15 mm. *Ramuli*, when viewed under microscope, show jointed appearance with the pellucid dissepiments, with the articulation externally consisting of regularly disposed longitudinal sets of tessellated cortical cells, and internally of some 10 pericentral cells, and terminated with deciduous fibrillae. The length of articulation of ramuli is subequal to the breadth. *Tetraspores* are formed in a twisted row in the upper somewhat swollen portion of ramuli which shows warty uneven surface. *Cystocarps* are oval, sessile, fixed on the side of upper or middle portion of

ramuli. *Colour* dark purplish brown, often fading to greenish. *Substance* stiff, cartilaginous.

Hab. On rocks and corals between tide marks and at low tide. Riukiu islands, Kagoshima, Hiuga, Tosa.

Hitherto-known: In the warmer Atlantic at North America; in the Mediterranean and Adriatic seas; in Indian Ocean and in Red Sea.

I have compared our plants with a specimen collected at the Antillies, France, and sent from Prof. Farlow, which is kept in the herbarium of Tōkyō Imperial University.

Plate IX. **Fig. 1:** Plant in nat. state and size.—**Fig. 2:** surface-view of a ramulus, $\frac{230}{1}$.—**Fig. 3:** cross-section of a ramulus, $\frac{230}{1}$.—**Fig. 4:** longitudinal section of a ramulus, $\frac{230}{1}$.—**Fig. 5:** apical portion of a ramulus to show the fibrillae and the growing apex, $\frac{350}{1}$.—**Fig. 6:** terminal portion of a fertile ramulus bearing tetraspores, $\frac{50}{1}$.—**Fig. 7:** surface-view of the portion bearing tetraspores, $\frac{220}{1}$.—**Fig. 8:** ramulus bearing two young cystocarps, $\frac{50}{1}$.—**Fig. 9:** ripened cystocarp, $\frac{50}{1}$.—**Fig. 10:** longitudinal section of a cystocarp, $\frac{50}{1}$.

第九圖版

Digenea Agardh.

まくり屬

ロドメラ科

性質. 體ハ圓柱狀ニシテ直立シ, 側面ヨリ分枝シ又ハ叉狀ニ分岐ス, 軟骨質ニシテ, 細胞組織ヨリ成ル. 體ハ長條ト短條トニ區別スベシ; 長條ハ太ク堅牢ニシテ伸長ニ限リナク, 短條ハ細クシテ伸長ニ限アリ. **長條**ハ明ニ關節シタル中軸ヲ存スルコトナク, 髓部ト皮部トヨリ成ル; 髓部ハ太クシテ可ナリ長キ細胞ヨリ成リ, 此細胞ハ其處此處ニ不明ニ横ニ關節ス; 皮部ハ髓部ト明ニ區別スベクシテ厚キ層ヲナシ, 内部ハ大ナル細胞ヨリ成リ, 外方ニ漸々小トナル; 長條ノ頂端ハ小細胞ヨリ成リ, 明ニ區別セラレタル成長點細胞ヲ存スルコトナシ. **短條**ハ長條ノ全面ヨリ各方面ニ無數ニ互生シテ散在シ, 概テ分枝スルコトナク, 有限成長ヲナシテ, 長キ細キ刺毛狀ヲナス, 其長條ノ皮層ヨリ生ズルニ當リテハ規則正シキ下部先長ノ伸ビ方ニハアラズ(或ハ内長?). 短條ハ規則正シク横ニ關節シ, 六乃至八條ノ太キ周心管アリテ一條ノ中軸ヲ圍ミ, 此周心管ヨリ分裂シテ生ズル小サキ皮層細胞ヲ以テ蔽ハル. 短條ノ伸長ハ横ニ關節セル頂細胞ヲ有シ, 其成長點附近ノ各關節細胞ヨリ毛狀體ヲ生ズ; 毛狀體ハ小ニシテ單管軸ヨリ成リ, 早落ス. **生殖細胞**ハ專ラ短條ニノミ生ズ. **四分孢子**ハ短條ノ上部ニ生ジ, 其部ハ稍膨大シテ表面凹凸ヲナシ平坦ナラズ, 短キ關節ヨリ成リテ概テ皮細胞ナク; 孢子ハ稍

螺旋狀ニ列リ、外方ニハ三個ノ被細胞ヲ以テ蔽ハル。精子器及ビ胎原ハ短條ノ毛狀體ニ生ズ。精子器ハ成長シツ、アル短條ノ頂部ニ多數ニ生ジ、極メテ早ク脱落ス；其形狀ハ小卵圓形ニシテ扁平葉狀ノ盤狀體ヲナス。囊果ハ卵形ニシテ或ハ短條ノ中央部ニ生シ或ハ頂端ニ近ク生ズ。

一屬一種ニシテ太西洋熱帶部、地中海、印度洋等ニ産ス。

Digenea simplex (Wulf.) Ag.

まくり、かいにんさう

Digenea simplex J. Ag. Sp. II, p. 845; Hauck Meeresalg. p. 215, fig. 93; de Toni Phyc. Jap. Nov. p. 32; Heydr. Beitr. Algenfl. Ost-Asien, p. 296; Harv. Ner. Bor. Amer. II, p. 30, Tab. XIII. D; Schmitz et Falkenb. in Engl. et Prantl Natürl. Pflanzenfam. p. 437, Fig. 245; 岡村, 日本海藻標品, 第一帙, 第二十四.—*Digenea Wulfeni* Kütz. Phyc. Gener. p. 433, tab. 50, II; Id. Sp. Alg. p. 841.—*Fucus Lycopodium* Turner Fuci. t. 199.—*Cladostephus Lycopodium* J. Ag. Sp. I, p. 42.

體ハ叢生シ、開張セル盤狀根ヨリ直立シ、圓柱狀ニシテ、5-25 cm. 高ク、2-3 mm. ノ太サヲ有シ、不規則ニ互生様叉狀ニ分枝ス；枝ハ直立ト廣開トノ中間ニ位シ、或標品ニテハ枝皆同一ノ高サニ達シ、他ノモノニテハ一二ノ枝他ノ枝ヨリ長シ。體ハ各部剛毛ノ如キ小枝ヲ以テ密ニ蔽ハレ、其之ナキ所ハ只體ノ下部ノ如キ其旣ニ脱落シタル部分ノミナリ。小枝(即チ短條)ハ廣開シ、絲狀ニシテ單條又ハ僅ニ分枝シ、硬ク、5-10、時

トシテハ 15 mm. ノ長サヲ有シ, 80-150 μ ノ太サヲ有ス; 小枝ヲ顯微鏡下ニ照セバ明ニ關節ヲ示シ, 表面ニハ敷石ヲ置ケル如ク規則正シク數列ニ配置セラレタル皮層細胞ヲ有シ, 内部ハ凡ソ十個ノ周心管アリテ頂部ハ早落スベキ毛狀體ヲ有ス. 小枝ノ關節ノ長サハ其幅ニ略ボ相同ジ. **四分胞子**ハ小枝ノ頂部稍膨レタル部分ニ生ジテ螺旋狀ニ並ビ, 其部分ノ表面ハ凹凸ニシテ平坦ナラズ. **囊果**ハ卵圓形ニシテ無柄, 小枝ノ上部又ハ中央部ノ側面ニ生ズ. 色ハ暗紫紅色ヲナシ往々褪色シテ綠色ヲナス. 質硬クシテ軟骨様ナリ.

產地. 潮線間及低潮線以下ノ岩石, 珊瑚礁等ニ生ズ. 琉球諸島, 鹿兒島, 日向(島ノ浦島, 大島), 土佐(柏島).

既地產地. 太西洋熱帶部; 北亞米利加; 地中海及ピアドリアチック海; 印度洋及紅海.

余ハ我東京帝國大學植物學室ニ藏スル佛國アンティリス産ノ標品ト比セルニ毫モ差アルヲ見ズ. 此海藻ハ古來まくりト稱シテ漢醫ノ用キタル所ナレモ其藥用成分ハ詳ナラズ.

第九圖版. **第一圖:** まくりノ自然ノ狀態, $\frac{1}{1}$. — **第二圖:** 小枝ノ表面, $\frac{230}{1}$. — **第三圖:** 小枝ノ橫斷面, $\frac{230}{1}$. — **第四圖:** 小枝ノ縱斷面, $\frac{230}{1}$. — **第五圖:** 小枝ノ上部ヲ廓大シテ毛狀體及ビ成長點ヲ示ス, $\frac{250}{1}$. — **第六圖:** 四分胞子ヲ有スル小枝ノ上部, $\frac{50}{1}$. — **第七圖:** 四分胞子ノ存スル部分ノ表面, $\frac{220}{1}$. — **第八圖:** 二個ノ幼キ囊果ヲ有スル小枝, $\frac{50}{1}$. — **第九圖:** 成熟シタル囊果, $\frac{50}{1}$. — **第十圖:** 囊果ノ縱斷面, $\frac{50}{1}$.





Samuel del.

1. *litis Fascia* (Muelb. Ku

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PLATE X.

Phyllitis Fascia (Muell.) Kütz.

ENCCELIACEÆ.

Nom. Jap. *Haba-nori*.

Phyllitis Fascia (Muell.) Kütz. Phyc. Gener., p. 342, tab. 24, III; Id., Sp. Alg., p. 566; Hauck, Meeresalg., p. 391; de Toni, Phyc. Jap. Nov., p. 55; Id. Syll. Alg. Vol. III, p. 487; Kjellman in Engl. et Prantl, Natürl. Pflanzenf. p. 203, Fig. 142.—*Laminaria Fascia* J. Ag. Sp. Alg. I, p. 129; Harv. Phyc. Brit. Pl. 45.

Root a scutate disk. *Fronds* tufted, gregarious, very variable in the form and size, 10–20 cm. high, 1–5 cm. broad in our specimens, broadly linear or lanceolate, with entire and flattish margin, tapering into a cuneate base and a short stipe. The upper end roundish or often eroded.

Hab. On rocks in high tide, Every-where known along the coasts of the Pacific and Japan sea.

Hitherto-known: In Artic sea; in North Atlantic Ocean, at the coasts of Europe and North America; in the Mediterranean; in Northern Pacific Ocean; in the sea of South America.

Plate X. Fig. 1: plants bearing sori in nat. state and size.—Fig. 2: cross-section of frond cut through a sorus, with hairs, $\frac{350}{1}$.—Fig. 3: pleurilocular sporangia detached, $\frac{684}{1}$.—Fig. 4: filamentous cells of the inner layer detached, $\frac{350}{1}$.

第十圖版

Phyllitis Kützinger.

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性質. 體ハ葉狀, 又ハ「バンド」狀ニシテ稀ニ線狀又ハ絲狀ヲナシ, 脈ナク, 下方ニ細クナリテ細圓柱狀ノ短莖ヲナシ, 時トシテハ處々中空トナル; 内部ハ圓形又ハ多角形ノ大ナル細胞ト關節セル細キ絲狀細胞トヨリ成リ, 外部ハ數層ノ小細胞ヨリ成ル. **パラフ井シス**ハ常ニ缺損ス. **生殖細胞**ハ始メ斑點ノ如ク生ジ遂ニ始ド全面ヲ蔽フニ到ル. 複子囊ハ稍稜形ノ圓柱狀ヲナス.

凡ソ三種ニシテ就中はゞのりハ最モ廣キ分布ヲ有ス.

Phyllitis Fascia (Muell.) Kütz.

はゞのり

Phyllitis Fascia (Muell.) Kütz. Phyc. Gener. p. 342, tab. 24, III; Id. Sp. Alg. p. 566; Hauck Meeresalg. p. 391; de Toni Phyc. Jap. Nov., p. 55; Id. Syll. Alg. Vol. III, p. 487; Kjellman in Engl. et Prantl., Natürl. Pflanzenf. p. 203, Fig. 142.—*Laminaria Fascia* J. Ag. Sp. Alg. I, p. 129; Harv. Phyc. Brit. Pl. 45.

根ハ小盤狀. **體**ハ叢生シ, 簇生ス; 形狀及ビ大サハ甚ダ變化シ易ク, 10-20 cm. ノ高ヲ有シ, 1-5 cm. ノ幅ヲ有ス; 而

三六

シテ廣キ線狀(即チバンド狀)又ハ稍披針狀ニシテ全縁, 畧ボ平坦ナル縁邊ヲ有シ, 下部楔形ニシテ短莖ニ終ル. 上端ハ圓ク往々缺損ス. 複子嚢ハ後チ體ノ全面ヲ蔽ヒ雲狀ヲナス.

產地. 高潮線ノ岩石ニ生ズ. 太平洋及ビ日本海沿岸隨所ニ産ス. 期節—冬季ヨリ晩春ニ至ル.

既地產地. 地中海及アドリアチック海; 北氷洋(スカンデナヴィア, デンマルク, グリーンランド); バルチック海; 太西洋(英國, 佛國); 北亞米利加; 南亞米利加.

各地沿岸ノ淺所ニ生ジ各地方ニテ食用トシ採集ス.

第十圖版. 第一圖: 子嚢群ヲ生ジタル體ノ自然ノ狀態, $\frac{1}{1}$.—第二圖: 子嚢群ノ部分ヲ切リタル體ノ横斷面ニシテ毛狀體アルヲ示ス, $\frac{350}{1}$.—第三圖: 複子嚢ヲ別ニ離シテ示ス, $\frac{684}{1}$.—第四圖: 體ノ内部ノ絲狀細胞, $\frac{350}{1}$.

學 語 解

下部先長又ハ頂部後生, acropetal; 枝, 葉ナドノ生ズル順序ニ用キル語ニシテ軸ノ頂端ニ最モ近キモノガ最モ幼キ状態ニアルヲ云フ。

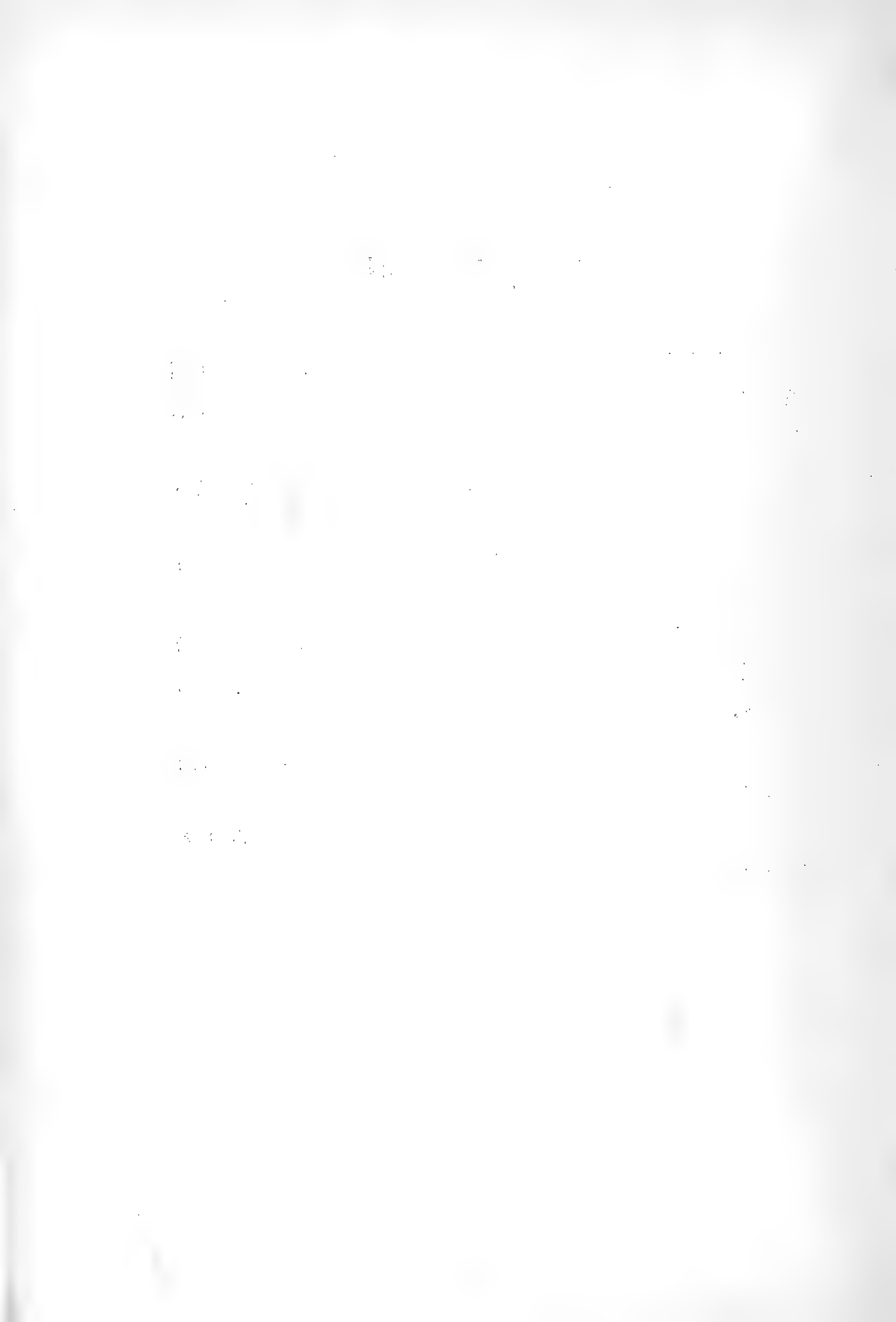
内長, endogen; 内部ノ組織ノ細胞分裂ニヨリテ枝又ハ此類ノモノヲ生ジ伸長スルヲ云フ。

毛; 毛狀體, fibrillæ; ロドメラ科ノ植物ノ成長點附近ヨリ生ズル毛狀體(海藻學汎論第三圖, 第三十六圖)。

假葉, phyllodium; 葉柄ガ葉片ノ如クニ變形シタルヲ云フ。今之ヲ小枝ガ葉ノ如ク扁キ葉狀ノ枝ニ變形シタルニ用キタリ。

波狀, repand; 葉ノ縁邊ナドニ波狀ニシテ圓ミアル凹凸ヲ有スルヲ云フ。

簇生, gregarious; 同一ノ植物ガ多數廣キ面積ヲ占メテ蕃殖スルヲ云フ。



東京神田區五軒町一番地

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第一卷第三冊

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ILLUSTRATIONS OF THE MARINE ALGÆ OF JAPAN.

Vol. I. No. 3.

BY

K. OKAMURA, *Rigakuhakushi.*

TOKYO.

1901.

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| 1. Némalion pulvinatum Grun. | 26. Ptilota dentata Okam. |
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K. Okamura, del.

...gramma interrupta (C. B. Merr.)

はきぢぐさ新種

PLATE XI.

Stenogramma interrupta (Ag.) Mont.

TYLOCARPEÆ (Gigartinaceæ).

Nom. Jap. *Hasuji-gusa*.

Stenogramma interrupta Harv. Phyc. Brit. tab. CLVII_a; Id. Ner. Bor. Amer. tab. 19 C; Id. Phyc. Austr. tab. 220; Kütz. Sp. Alg. p. 873; Id. Tab. Phyc. XVI, t. 21; J. Ag. Sp. Alg. II, p. 391; Id. Epicr. p. 215; Johnst. and Croall Brit. Seaweeds II, p. 21, tab. 73; Johnson On *stenogram. interr.*, 1892, in Ann. of Bot. VI. p. 361, tab. 23; De Toni Syll. Alg. IV. p. 239; Schmitz et Hauptfl. in Engl. u. Prantl's Natürl. Pflanzenfam. p. 359.—*Stenogramma Californicum* J. Ag. Sp. Alg. II. p. 392; Kütz. Sp. Alg. p. 874.

Root, a small conical disc. *Fronde* flabelliform; 4–10 cm. long and broad, rising from a small filiform stem which soon passes into a cuneate membrane; this membrane expands and forks, and afterward is repeatedly divided more or less in regular dichotomous manner. *Segments* broadly linear, 0.5–1 cm. broad, erecto-patent or spreading with blunt apices and axils. Sometimes one of the segments is accidentally torn off, and one or more proliferous elongations arise from the harmed ends, which become dichotomous like the rest. The *margin* which is usually quite flat and entire, sometimes throws out minute, lobed, and somewhat fringed processes. *Cystocarps* linear, occupying the centre of the segments after the manner of a midrib, but never continuous, being always interrupted about the axils. *Tetraspores* forming roundish or oval, wart-like, prominent nemathecia which are scattered on both surfaces. *Colour* a bright pinkish-red,

preserved in drying. *Substance* thin, membranaceous. In drying the frond imperfectly adheres to paper.

Hab. Perhaps in deep waters. Nagasaki, Ōtsu (Hitachi), Onahama (Iwaki), Matsushima (Rikuzen), Hakodate. Fruits—
Summar.

Hitherto-known: In the warmer Atlantic of Europe and America. In the Pacific at California and Corea. In New Zealand and Tasmania.

Plate XI. **Fig. 1:** *Stenogramma interrupta* with cystocarps, $\frac{1}{1}$.—**Fig. 2:** the same with nemathecium, $\frac{1}{1}$.—**Fig. 3:** surface-view of the membrane showing the prominence of cystocarpic portion, $\frac{1}{1}$.—**Fig. 4:** cross-section of cystocarpic portion in a young state, $\frac{240}{1}$.—**Fig. 5:** cross-section of nemathecium, moderately magd.—**Fig. 6:** surface-view of frond, $\frac{240}{1}$.

第十一圖版

Stenogramma Harv.

はすじぐさ屬

チロカルバ亞科 (すぎのり科)

性質. 體ハ薄膜, 扁平, 叉狀ニシテ縁邊ヨリ枝ヲ副出シ, 二層ヨリ成ル; 内層ハ大ナル圓形—多角形ノ二乃至數層ノ細胞ヨリ成リ, 外層ハ小サキ皮細胞ノ略一層ヨリ成ル. 四分孢子囊ハ體ノ兩面ニ稍半球狀ニ隆起セルチマセシアヲ成シテ散在ス; チマセシアハ體ノ皮層細胞ノ伸長シタル關節絲ヨリ構成セラレ, 後其絲ノ各節十字様ノ孢子ニ變形ス, 故ニ孢子ハ念珠狀ヲナシテ聯列ス. 囊果ヲ熟シタル體ハ各部ノ中央線ニ沿フテ中肋ノ如キ條ヲ存ス; 此條ハ所々斷絶シテ, 各部ノモノ相連絡スルコトナシ. 此條ニ沿フテ髓層則チ内層ノ細胞ハ弛緩シテ空虛トナリ, 小ニシテ分岐セル絲狀細胞ノ粗ニ錯綜スルモノヲ存ス; 此部ノ外層ハ甚シク増厚シ, 其内壁ニ於テ多數ノ胎原細胞ヲ存ス(肋細胞ハ其上ニ胎原列ヲ有ス). 成胞絲ハ此條部ニ罕ニ一個, 往々多數ニ生ジ, 通常密ニ相隣接シテ羅列シ, 總テノ成胞絲相集マリテ複仁ヲ形成ス. 囊果ハ斯ノ如クシテ形成セラレ, 體ノ兩面ニ隆起シ稀ニ圓形ヲナシ, 通常多少長メヲ帶ビ, 多數ノ果孔ヲ體ノ兩面ニ開ク; 仁ハ數多ニシテ中條部ノ空所中ニ長ク縦列シ後稍錯雜ス; 小仁ハ密ニ相集合シ, 胎座ニ相當スル絲ヲ以テ互ニ相隔離セラル; 果孢子ハ小ニシテ球狀, 不規則ニ團集ス.

只二種ニシテ共ニ溫暖ノ海ニ生ズ。其一種はすじぐさ
ハ廣ク分布スレドモ只其處此處ニ散在スルノミ。

Stenogramma interrupta (Ag.) Mont.

はすじぐさ 新稱

Stenogramma interrupta Harv. Phyc. Brit. tab. CLVII; Id. Ner. Bor. Amer. tab. 19 C; Id. Phyc. Austr. tab. 220; Kütz. Sp. Alg. p. 873; Id. Tab. Phyc. XVI. t. 21; J. Ag. Sp. Alg. II, p. 391; Id. Epicr. p. 215; Johnst. and Croall Brit. Seaweeds II, p. 21, tab. 73; Johnson On *Stenogramma interr.*, 1892, in Ann. of Bot. VI. p. 361, tab. 23; De Toni Syll. Alg. IV. p. 239; Schmitz et Hauptfl. in Engl. u. Prantl's Natürl. Pflanzenfam. p. 359.—*Stenogramma Californicum* J. Ag. Sp. Alg. II. p. 392; Kütz. Sp. Alg. p. 874.

根ハ小サキ圓錐形ノ盤狀根。體ハ小ニシテ細キ莖ヲ有シ、莖ノ上部ハ直ニ楔形ノ薄膜ニ開張シ、此膜更ニ叉狀ニ分レ、後屢々分岐シテ全體扇狀ヲナシ、其高サ及ビ幅ハ 4-10 cm.ニ達ス；叉枝ハ多少規則正シキ叉狀ニ分ル。各部ハ廣キ線狀ニシテ、直立一廣開、或ハ尙ホ廣ク開キ、枝端鈍圓ニシテ、腋圓ク、幅 0.5-1 cm. アリ。時トシテ、枝ノ一部偶々害ヲ蒙ルコトアレバ、一條乃至數條ノ副枝ヲ其疵口ヨリ生ジ、此副枝モ亦他ノ部ト同様ニ叉狀ヲナス。縁邊ハ通常全縁ニシテ平坦ナレドモ、時トシテハ又副枝ヲ生ズ；副枝ハ小ニシテ分裂シ、往々總ヲ付シタル如キ觀ヲ呈スルコトアリ。囊果ハ線狀ニシテ各部ノ中央線ニ生ズル狀、恰モ中肋ノ如キ觀ヲナス；然

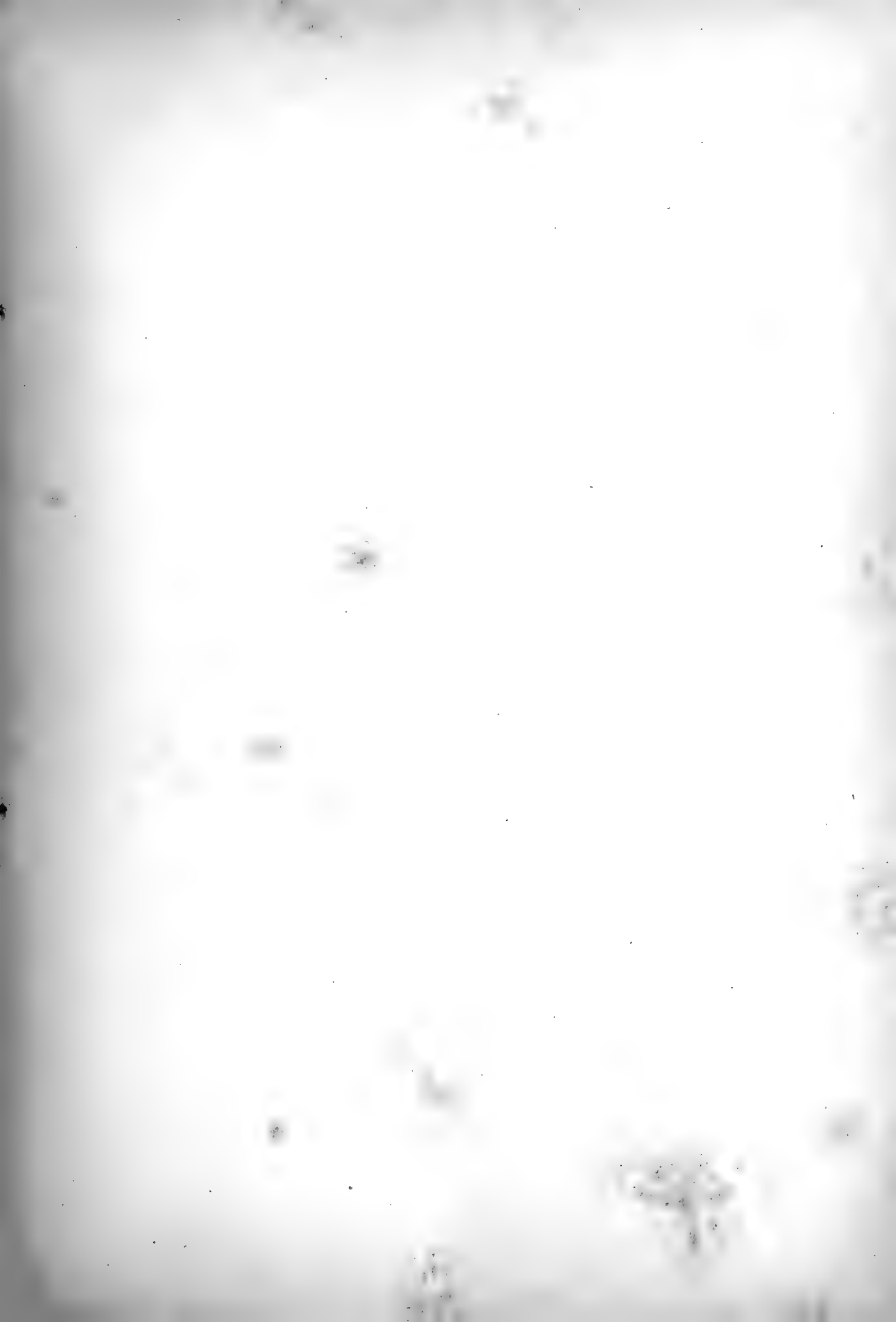
レドモ各部ノモノ相連絡スルコトナク、常ニ分岐點附近ニテ斷絶ス。四分胞子ハ圓形又ハ卵圓形ノ子マセシアヲ爲シテ體ノ兩面ニ散在シ、子マセシアハ稍扁キ半球狀ニ隆起ス。色、鮮紅色ニシテ乾燥スルニ至リテモ同様ナリ。質、薄膜質ニシテ乾燥スルトキハ紙ニ附着スルコト充分ナラズ。

產地、多分ハ深處ニ生ズルナルベシ。長崎、大津(常陸)、小名濱(磐城)、松島(陸前)、函館。果實一夏季。

既知產地、太西洋溫暖部則チ歐洲及ビ米國ノ沿岸。太平洋則チカリホルニア及朝鮮、ニウジーランド及ビタスマニア。

此種ノ囊果ノ形成スル方法ハJohnson氏ノ研究スル所ニシテ上記引用書中ニ記セリ、余ノ著海藻學汎論第十圖版五一七圖ニ之ヲ引用セリ。

第十一圖版。第一圖：囊果ヲ有スルはすじぐさ、 $\frac{1}{1}$ 。—第二圖：子マセシアヲ有スルモノ、 $\frac{1}{1}$ 。—第三圖：體ノ表面ニ囊果ノ隆起スル狀、 $\frac{1^0}{1}$ 。—第四圖：囊果ノ稍幼キ部分ノ橫斷面、 $\frac{2^1}{1}$ 。—第五圖：子マセシアノ橫斷面、廓大。—第六圖：體ノ表面ノ細胞ヲ上ヨリ見タルモノ、 $\frac{2^1}{1}$ 。



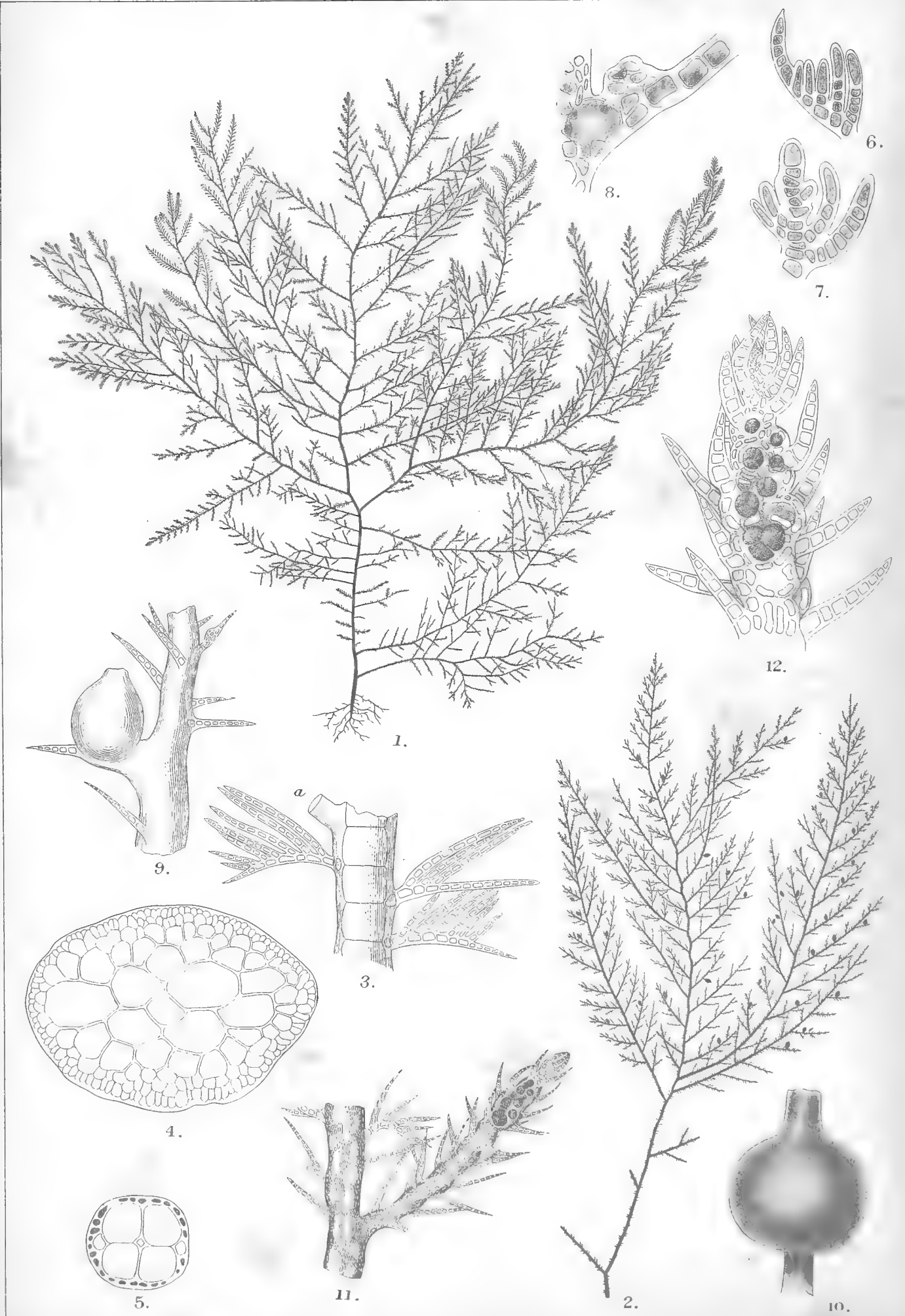


PLATE XII.

Isoptera Gen. nov.

LOPHOTHALIEÆ (Rhodomelaceæ).

Isoptera: *Frond* filiform, compressed, 2-3 times alternatopinnate, distichous, thoroughly corticated, with patent branches which are furnished with pectinated, monosiphonous, coloured "*Haarblättern*" alternately arising in twos on both sides (only denuded in the lower portions). "*Langtriebe*" developed from upper one of the two consecutive "*Haarblättern*." Mode of growth of shoots is monopodial with a subobliquely articulated apical cell whose successive articulations soon give rise to paired "*Haarblättern*." Pericentral cells 4 in number, more or less thickly corticated. *Tetraspores* formed in upper swollen portion of slightly twisted, stichidia-like, short "*Langtriebe*" which carry simple "*Haarblättern*," usually in pairs in each articulation, making cross-way to each other. *Procarps* produced on the upper side of the lowest or next cell of the rachis of mostly simple "*Haarblättern*" which are developed near the growing apices of shoots. *Cystocarps* globular with more or less prominent carpostome, almost sessile or provided with a very short apparent pedicel.

Isoptera regularis Sp. nov.

Nom. Jap. *Hiyoku-sō*.

Characters same as those of the genus.

Hab. Perhaps in the deep waters. Enoshima and Misaki (Sagami). Fruits—Spring.

Descr.: The beautiful plant somewhat resembles in its external appearance to *Bonnemaisonia Asparagoides*. The *frond* is coespitose, attached to substratum by fibrous roots, filiform and compressed, 2-3 times pinnate, alternate and distichous, about 15 cm. high and 0.5 mm. broad in the lower portion. The entire plant is primarily divided into some main divisions which ramify in successive order, and the general outline of one main segment is broadly oval or lanceolate. The rachis of main branches are very slightly flexuous. The persistent, coloured, monosiphonous "*Haarblättern*" arise regularly alternating along both sides of branches, in such a manner that those issuing from every two consecutive nodes stand in alternation on the sides. They are normally branched in a pectinate manner, that is 6-7 laciniae issue from every articulation along the upper side of the monosiphonous rachis. The latter, when young, is incurved towards the apex of the shoot which bears those "*Haarblättern*," but soon becomes straight and patent, and then either gradually becomes almost horizontal or curves backwards. Laciniae are directed outwards, standing almost parallel to one another. The rachis and laciniae are all sharply pointed at the ends. "*Langtrieb*," definite or indefinite, develops from the upper one of the two consecutive "*Haarblättern*." Consequently, "*Langtriebe*" arise, as a rule, alternately from every 6th joint; but when they are more widely separated, they sometimes arise from 10th, or when more approached, from 2nd, articulation. Simple, or not pectinated "*Haarblättern*" are of rather rare occurrence except on the fertile branches; and, when they are present in the sterile portion, they are mostly placed beneath the pectinated one. Again, their disposition is commonly distichous, but not without some irregularities, especially in sporiferous branches where they are arranged on all sides.

The shoot is composed of a distinctly articulated polysiphonous axis with four pericentral cells, coated internally with many layers of larger cells and externally with minute polygonal cellules. Mode of growth of shoot is monopodial with an obliquely articulated apical cell whose successive articulations soon give rise to pectinated "Haarblättern."

Tetraspores are formed in the swollen portion of simple or branched "Langtriebe" of the ultimate order, which are more or less differentiated into stichidia and are provided with simple "Haarblättern." There are found two of them in each articulation (rarely one) arranged in such a way that every pair makes cross-way with that of the next. The surface of sporiferous portion is uneven, and owing to its slightly twisting, "Haarblättern" appear as if arising from all sides. The *procarp* is produced near the apical portion of growing shoot, being formed single on each "Haarblatt." It is developed from the lowest basal cell or from that next to it along the upper side of the fertile "Haarblättern" which are generally simple; but a few laciniae are sometimes present. The *cystocarps* are globular, almost sessile or furnished with a very short apparent pedicel, provided with a slightly prominent carpostome and sometimes carry the remnant of the terminal portion of the rachis at their bases. Colour a bright red. Substance soft-cartilaginous and the frond imperfectly adheres to paper in drying.

The present alga stands in the system near *Lophothalia* and *Pteronia*. From the generic character of *Pteronia* given by Prof. Falkenberg in Engl. u. Prantl's *Natürlichen Pflanzenfamilien*, I. Theil, 2, p. 452, we learn that the frond is compressed and branched out on both sides, whose "*Langspross*" is furnished with simple monosiphonous "*Haarblättern*" which alternate in two

rows. Again concerting with Harvey's illustrations (Harvey's Ner. Austr. tab. XXVII.) and Prof. J. Agardh's description (J. Ag. Sp. Alg. II. p. 1184) of *Dasya pectinata* (i.e. *Pteronia pectinata*), we understand that pinnae (i.e. "*Langspross*") arise from every second node and pinnulae (i.e. "*Haarblättern*") from every articulation,—both alternately and distichously. Thus the arrangement of "*Kurztriebe*" and "*Haarblättern*" is wholly different from that of those of the present plant which has all "*Langtriebe*" always transformed from upper one of the paired "*Haarblättern*" and strictly keeps this regularity for the general arrangement of "*Haarblättern*" and "*Langtriebe*." Again, "*Haarblättern*" which are pectinated along the upper side of the rachis alternate along both sides of branches in so regular manner that those arising from two consecutive nodes stand in alternation on the sides. Plant having such a regular disposition of "*Haarblättern*" and "*Langtriebe*" does not find its position among established genera.

In the next place, *Pteronia pectinata* is said to have compressed or flattened frond according to Prof. Falkenberg's description (though it appears cylindrical from Harvey's illustration), which has branches and "*Haarblättern*" disposed in distichous and alternate manner. Moreover, some ("*häufig 2 aufeinander folgende*") "*Haarblättern*" produce branches from their basal cells pointing upwards. This seems to me to show some relation with the pectinate branching of "*Haarblättern*" in our plant; and, as also the compressed and disticho-alternate habit is same with *Isoptera* (though "*Haarblättern*" are alternate in twos), the plant in consideration is not without some degree of affinity with *Pteronia*.

The structure of stichidia in our plant is quite similar to that of *Lophothalia* which, however, differs from the present plant in having "*Langtriebe*" and "*Haarblättern*" growing on all sides

of shoot. The plant in consideration has "*Haarblättern*" sometimes arising from all sides of shoot, especially on fertile portions, as I have stated above. From these relations, we may naturally infer the plant in question as one which stands near *Lophothalia* and *Pteronia*.

Plate XII. Fig. 1: frond of *Isoptera regularis* bearing tetraspores, $\frac{1}{1}$.—Fig. 2: portion of frond bearing cystocarps, $\frac{1}{1}$.—Fig. 3: "Haarblättern" and a "Langtrieb," α , $\frac{50}{1}$.—Fig. 4: cross-section of lower portion of the frond, $\frac{63}{1}$.—Fig. 5: cross-section of the upper portion, magd.—Fig. 6: young "Haarblatt," $\frac{350}{1}$.—Fig. 7: apical portion of shoot, whose articulations giving rise to "Haarblättern," $\frac{350}{1}$.—Fig. 8: procarp, $\frac{220}{1}$.—Fig. 9: cystocarp, $\frac{60}{1}$.—Fig. 10: cystocarp with a prominent carpostome, magd.—Fig. 11: stichidial branch, $\frac{52}{1}$.—Fig. 12: the same more magd., $\frac{130}{1}$.

第十二圖版

Isoptera, Gen. nov.

ひよくさう屬

ロホサリア亞科 (ロドメラ科)

性質. 體ハ絲狀, 扁圓, 兩緣ヨリ再三互生ニ羽狀ヲナシ, 厚ク皮層ヲ被ムリ, 廣開セル枝ヲ有ス; 枝ハ單列ニシテ有色ノ毛狀枝ヲ擔ヒ; 毛狀枝ハ櫛齒狀ニ分枝シ, 二個ヅ、枝ノ兩緣ニ互生ス(只枝ノ下部ノミ之ヲ缺ク). 長條ハ相隣レル二個ノ毛狀枝ノ上部ノモノヨリ變成ス. 體ノ伸長スル方法ハ單基ニシテ, 頂細胞ハ稍斜面ヲ以テ分裂シ, 其分裂ニヨリテ生ジタル關節ハ直ニ毛狀枝ヲ生ズ. 周心管ハ四條ニシテ厚ク皮層ヲ以テ蔽ハル. 四分胞子囊ハ短キ長條ノ上部少シク膨レ且ツ稍捻レタルステイキジアノ如キ部分ニ生ジ, 其部ハ單條ノ毛狀枝ヲ存ス; 而シテ通常各關節ニ一雙ノ四分胞子囊ヲ生ジ互ニ交叉シテ配置ス. 胎原ハ方サニ伸長スル軸ノ頂端ニ近ク生ジ, 其部ニアル所ノ通常單條ノ毛狀枝ノ最下位若クハ其次ノ關節ノ上側ニ生ズ. 囊果ハ球狀ニシテ上部少シク突出セル果孔ヲ有シ, 殆ド無柄若クハ極メテ短キ柄ヲ存ス.

Isoptera regularis Sp. nov.

ひよくさう 新種

種ノ性質ハ屬ノ性質ニ同ジ.

產地. 多分深處ニ産スルナラン. 江ノ島及三崎(相州).
果實一春季.

四二

體ハ叢生シ、纖維根ヲ以テ他物ニ附着シ、絲狀ニシテ扁圓、再三羽狀ヲナシ、互生ニシテ兩緣ヨリ分枝ス、高サ凡ソ 15 cm. ニシテ太サハ體ノ下部ニテ 0.5 mm. アリ。體ハ先ヅ幾個ノ主枝ニ分レ、主枝ハ順次ニ分枝ス；斯クテ主枝ノ輪廓ハ卵圓形若クハ廣キ披針狀ヲナス。凡テ主ナル枝ノ軸ハ少シク屈折ス。單列ニシテ有色ノ**毛狀枝**ハ枝ノ兩側ヨリ規則正シク互生シテ永存シ、一側ノ相隣レル各二節ヨリ生ズル毛狀枝ハ他ノ側ヨリ同様ニ生ズル二條ノモノト互生ス。毛狀枝ハ通常櫛齒狀ニ分枝ス、則チ單列ノ軸ノ各節ヨリ上方ニ 6-7 條ノ小枝ヲ生ズ。其軸ハ始メ其之ヲ擔ヘル枝ノ頂端ノ方ニ向テ屈曲シ、後直出廣開シ、遂ニ漸々水平ノ位置ヲ取ルカ、或ハ下方ニ灣曲ス。其小枝ハ外方ニ向ケラレ、互ニ相並行ス。其軸及ビ小枝ハ皆總テ尖銳ニ終ル。**長條**ハ其伸長ニ限リアルモノト限リナキモノトヲ問ハズ、相隣レル二個ノ毛狀枝ノ上部ノ一ヨリ變成ス；故ニ長條ハ各六番目ノ節ヨル互生スルコト規則ナレドモ、其尙ホ遠ク離ルゝトキハ十番目ノ節ヨリシ、又相近ク出ルトキハ二番目ノ節ヨリス。單條則チ櫛齒狀ヲナサル毛狀枝ハ、果實ヲ有スル枝ニ於ケル外ハ寧ロ稀ナリトス；而シテ其果實ナキ枝ニ之アルトキハ概チ櫛齒狀ヲナセルモノト下ニ存ス。毛狀枝ノ配置ハ通常枝ノ兩側ニアリ、然レドモ或不規則ノ場合ナキニアラズ；殊ニ四分胞子ヲ有スル枝ニ於テ然リトス；則チ此ノ如キ部分ニハ其周圍ヨリ之ヲ生ズ。

諸軸ハ明ニ關節セル多管軸ヨリ成リ四條ノ周心管ヲ存シ、之ヲ蔽フニ二層ノ組織ヲ以テス；其内層ハ數層ノ大ナル細胞ヨリ成リ、外層ハ小サキ多角形ノ細胞ヨリ成ル。**伸長法**

ハ單基ニシテ、稍斜ニ關節セル頂細胞ヲ有シ、其下ニ位スル細胞ハ直ニ分枝シテ櫛齒狀ノ毛狀枝ヲ生ズ。

四分孢子囊ハ最末位ノ長條ノ膨レタル部分ニ生ジ、其部ハ單條又ハ分枝ス；而シテ多少スティキジア様ニ變成シ、單條ノ毛狀枝ヲ存ス。四分孢子囊ハ各關節ニ二個（稀ニ一個）ヲ生ジ、各雙其次ノモノト互ニ交叉ス。孢子ヲ有スル部分ノ表面ハ凹凸ニシテ、其部ノ少シク捻レタル爲メ、毛狀枝ハ恰モ各方面ヨリ出ルガ如ク見ユ。**胎原**ハ方サニ伸長スル軸ノ頂端ニ近ク生ジ、其部ヨリ生ズル各毛狀枝ニ一個ヲ生ズ；則チ此毛狀枝ノ最下位ノ細胞若クハ其次ノ細胞ヨリ之ヲ生ズ；而シテ此毛狀枝ハ通常單條ナレドモ、時トシテハー二ノ小枝ヲ存スルコトアリ。**囊果**ハ球狀ニシテ、殆ド無柄若クハ極メテ短キ柄ヲ存シ、少シク隆起セル果口ヲ存ス、而シテ時トシテハ囊果ノ基部ニ毛狀枝ノ軸ノ頂端ノ殘餘ヲ付スルコトアリ。**色**、鮮紅色。**質**、軟キ軟骨質ニシテ、乾燥スルト、キハ紙ニ附着スルコト充分ナラズ。

本植物ハ分類上 *Pteronia* 屬ト *Lophothalia* 屬トニ近ク置カルベキモノトス。上ニ引用セル如ク *Natürl. Pflanzenfam.* 中ニ Prof. Falkenberg 氏ノ與ヘタル此屬ノ性質ヲ以テ見ルニ、*Pteronia* ノ體ハ扁圓ニシテ兩側ヨリ分枝シ、其長條ハ二列ニ互生スル毛狀枝ヲ擔ヒ、毛狀枝ハ單條ニシテ單列細胞ヨリ成ルコトヲ知ル。更ニ *Dasya pectinata* (則チ *Pteronia pectinata*) ニ就テ Harvey 氏ノ圖說スル所 (*Harv. Ner. Austr. tab. XXVII.*) 及ビ J. Agardh 氏ノ記載 (*J. Ag. Sp. Alg. II. p. 1184*) スル所ヲ參考スルニ、羽枝 (則チ長條) ハ各第二ノ節ヨリ生ジ、小羽枝 (則チ毛狀枝) ハ各

四四

節ヨリ生ジ一兩者トモ互生ニシテ且ツ軸ノ兩緣ヨリ出ヅト、
今本植物ニ於テハ長條ト毛狀枝トノ配置ハ正ニ之ト異ナリ、
長條ハ常ニ一側ヨリ出ル二條ノ毛狀枝ノ上部ノ一ヨリ變成
スルモノニシテ、長條ト毛狀枝トノ配置ニ就テハ、各部嚴ニ此
規則ヲ追フモノトス；而シテ毛狀枝ハ二個宛一側ヨリ出デ
、他ノ二個ト互生ス。

次ニ、*Pteronia pectinata* ハ Falkenberg 氏ノ記載スル所ニ依
レバ、扁圓若クハ扁平ノ體ヲ有シ、長條及ビ毛狀枝ハ體ノ兩
緣ヨリ互生ス (Harvey 氏ノ圖ニテハ圓柱狀ノ如ク見ユ)。加
之、毛狀枝ノ或一(“往々相隣レル二個”)ハ其基部ノ細胞ヨリ
上方ニ小枝ヲ生ズルコトヲ記セリ。此點ハ、余ヲ以テ見ルニ、
本植物ノ毛狀枝ニ於ケル櫛齒狀ノ分枝セルモノト、或關係ヲ
有スルモノ、如ク思ハル；而シテ扁圓ニシテ兩緣ヨリ互生
スル性質モ亦本植物ト同一ナルニ依リ、(尤モ毛狀枝ハ本植
物ニ於テハ二個ヅ、互生スレドモ)、ひよくさうハ幾分カ *Ptero-*
nia 屬ト或關係ヲ有スルモノ、如シ。

本植物ニ於ケルスティキジアノ造構ハ *Lophothalia* 屬ノモ
ノト全ク同一ナリ；然レドモ本植物ノ *Lophothalia* 屬ト異ナ
ルハ、其屬ニアリテハ長條及ビ毛狀枝ガ軸ノ各方面ヨリ生ズ
ルニアリトス。本植物ニアリテモ、上ニ記載セル如ク時トシ
テハ軸ノ各方面ヨリ毛狀枝ヲ生ズルコトアリ、殊ニ四分胞子
嚢ヲ有スル部分ニ於テ然リトス。此等ノ關係ヨリ、吾人ハ本
植物ヲ以テ *Lophothalia* 屬ト *Pteronia* 屬トニ近キノト結論ス
ルノ至當ナルヲ知ラン。

第十二圖版。第一圖：四分孢子囊ヲ有スルひよくさう,
 $\frac{1}{1}$ 。—第二圖：囊果ヲ有スル體ノ一部, $\frac{1}{1}$ 。—第三圖：毛狀枝及長
 條, α , $\frac{5.0}{1}$ 。—第四圖：體ノ下部ノ軸ノ横斷面, $\frac{6.3}{1}$ 。—第五圖：上
 部ノ軸ノ横斷面, 廓大。—第六圖：幼キ毛狀枝, $\frac{3.5.0}{1}$ 。—第七圖：軸
 ノ成長點ヲ示シ其下部ノ關節ヨリ毛狀枝ヲ生ズル狀, $\frac{3.5.0}{1}$ 。—
 第八圖：胎原, $\frac{2.2.0}{1}$ 。—第九圖：囊果, $\frac{5.0}{1}$ 。—第十圖：突出セル果
 孔ヲ有スル囊果, 廓大。—第十一圖：スティキジア様ノ枝, $\frac{5.0}{1}$ 。—
 第十二圖：同上ノ一部, $\frac{1.3.0}{1}$ 。



PLATE XIII.

Neurymenia fraxinifolia (Mert.) J. Ag.

AMANSIÆ (Rhodomelaceæ).

Nom. Jap. *Iso-bashō*.

Neurymenia fraxinifolia J. Ag. Sp. Alg. II, p. 1135; Schmitz u. Falkenberg in Engler u. Prantl's Natürl. Pflanzenfam. p. 471.—*Dictyomenia fraxinifolia* Harv. Phyc. Austr. tab. CXXIV.—*Epineuron fraxinifolium* Kütz. Sp. Alg. p. 849.—*Fucus fraxinifolius* Mert. Turn. Hist. Fuc. tab. 193.

Root a broad disc. *Frond* leaf-like, linear-oblong, simple or pinnately lobed, with a prominent midrib and parallel veins, furnished below with a cylindrical stem which varies in length and thickness according to age of the plant. The *plant* branches by producing similar segments repeatedly from both surfaces of the midrib. In specimens before us, the frond attains 10–20 cm. in height. As the frond grows in age, lamina of the primary leaf becomes decayed and the midrib is transformed into stipe. Thus the plant may have simple or branched stem. *Lamina* linear-oblong, 10–15 cm. long, 10–17 mm. broad, very obtuse at bases, emarginated and rounded at apices, slightly undulated, serrated throughout, midribbed and closely penninerved with slender, patent viens. Veins scarcely observable to naked eyes, obliquely ascending alternately from the midrib to marginal teeth, parallel in a short regular distance; upper veins curve at emarginated lobes and converge to each other. Marginal teeth are spinose and branched with subulate and recurved ramuli; similar processes (simple or branched) also arise along veins and midribs, and consequently the surface of lamina is generally rough. *Cystocarps* unknown. *Stichidia* are lanceolate or linear, acute, shortly

stipitate, containing a double row of tetraspores. *Colour* when recent is said to be a very deep full red, fading to reddish-brown in drying. *Substance* rigidly membranous. It does not adhere to paper in drying.

Hab. Riukiu Islands at Kerama and Ishigaki-jima (Kuroiwa).

Hitherto-known : In Indian Ocean at Ceylon and Madagascar. In Western New Holland.

Plate XIII. **Fig. 1** : full-grown form of sterile frond of *Neurymenia fraxinifolia* in nat. size.—**Fig. 2** : another form of the same, $\frac{1}{1}$.—**Fig. 3** : marginal portion of membrane, showing marginal spines and veins, slightly magd.—**Fig. 4** : spine, $\frac{145}{1}$.—**Fig. 5** : surface-view of lamina, $\frac{240}{1}$.—**Fig. 6** : two fibrillae on the dorsal median line of a small shoot proliferated from the surface of lamina, $\frac{90}{1}$.—**Fig. 7** : section of lamina cut perpendicular to veins ; *a*, vein, $\frac{175}{1}$.—**Fig. 8** : tangential section of lamina showing cells of the inner layer of frond and a vein, *a*, $\frac{50}{1}$.—**Fig. 9** : surface-view of lamina bearing stichidia, $\frac{10}{1}$.—**Fig. 10** : stichidium, $\frac{50}{1}$.—**Fig. 11** : surface-view of a stichidium ; *a*, axis, $\frac{240}{1}$.

第十三圖版

Neurymenia J. Agardh.

いそばせを屬

ひをどしぐさ亞科 (ロドメラ科)

性質. 體ハ直立シ, 扁平, 葉狀ニシテ薄皮ノ如キ質ヲ有シ, 著シク隆起セル中肋ヲ存シ, 下部ハ後ニ莖ヲナシ, 腹背ノ性質ヲ有ス, 則チ體ノ頂端ハ腹部ノ方ニ輕ク屈曲ス; 頂細胞ハ體ノ頂端多少深ク倒心臟形ニ凹ミタル部分ニ存ス. 縁邊ハ鋸齒狀ヲナシテ平坦又ハ腹部ノ方ニ稍反卷ス. 多管軸ハ各關節ニ五條ノ周心管ヲ有シ(五個ノ内二對ハ中軸ノ左右ニ, 一ハ腹部ノ側ニアリ)中軸ノ左右ナル各對ノ周心細胞ハ其各ノ側ニ於テ縁邊ノ方ニ, 他ノ多數ノ同様ナル細胞ヲ分裂シ, 以テ中軸ノ兩側ニ兩翼ノ如ク廣ガレル二層ノ細胞組織ヲ生ズ; 此細胞層ハ中軸ヨリ兩縁ノ方ニ斜ニ走レル細脈ヲ以テ貫通セラレ, 脈ノ間ニ斜ニ横列ス, 而シテ早ク後生的皮層細胞ヲ以テ蔽ハル; 皮層細胞ハ多少厚層ヲナシ, 内部ノ細胞ハ大ニシテ外部ノモノハ小ナリ. 主枝ハ其中肋ヨリ内長的ニ生ジテ兩縁ニ出ヅベキ側枝ヲ生ズルコトナシ; 然レドモ中肋ノ兩面ヨリ副出スル枝ヲ以テ多少分枝ス. 次ニ各部ノ縁邊及ビ側脈ニ沿フテ棘狀枝ヲ生ズ; 棘狀枝ハ小ニシテ, 直出シ, 硬ク, 單條又ハ分岐シテ輻狀ニ組成セラル. 此棘狀枝ノ基部ヨリ往々小ナル枝ヲ副出スルコトアリテ, 此副枝ハ或ハ果實ヲ有スルモノトナリ又ハ之ヲ生ズルコトナクシテ, 腹背ノ造構ヲ有ス. 主枝ニハ早落スベキ毛狀枝ヲ生ズルコトナケレ

ドモ、總テ腹背ノ性質ヲ有スル枝ハ其背面ノ中央線ニ沿フテ
 一列ヲナセル毛狀枝即チ毛狀體ヲ生ズ。體ノ主ナル分枝法
 ハ專ラ中肋ヨリ枝ヲ副出スルニ依ルモノトス。四分胞子囊
 ハ スティキジア ノ如ク變成セラレタル小枝ノ上部ニ生ズ；其
 小枝ハ小ニシテ細ク、且ツ腹背ノ造構ヲ有スル枝ニシテ、體
 ノ兩面ヨリ生ズル棘狀枝ノ基部ヨリ、單獨ニ若クハ叢生シテ
 生ズ。 スティキジア ハ僅ニ柄ヲ區別スベク、扁平ニシテ長メ
 ナル披針狀ヲナシ、其頂端腹面ノ方ニ卷キ、腹面ニ沿フテ二
 縱列ノ四分胞子囊ヲ有ス；四分胞子囊ハ腹面ノ方ニ接近セ
 ル周心管ヨリ生ジ各節ニ二個ヲ存シ、外面ハ此周心管ヨリ分
 裂セル二箇ノ被細胞ヲ以テ蔽ハル。精子器、胎原及ビ囊果ハ
 未詳。

一屬一種ノミニシテ可ナリ種々變形ス。

Neurymenia fraxinifolia (Mert.) J. Ag.

いそばせを 新稱

Neurymenia fraxinifolia J. Ag. Sp. Alg. II., p. 1135; Schmitz u. Falkenberg in Engl. u. Prantl's Natürl. Pflanzenfam. p. 471.—*Dictyomenia fraxinifolia* Harv. Phyc. Austr. tab. CXXIV.—*Epineuron fraxinifolium*, Kütz. Sp. Alg. p. 849.—*Fucus fraxinifolius* Mert. Turn. Hist. Fuc. tab. 193.

根ハ廣キ盤狀根。體ハ葉狀ニシテ、廣キ線狀或ハ長橢圓形ヲナシ、單一又ハ羽狀ニ分裂シ、隆起セル中肋ト相互ニ並行セル側脈トヲ存シ、下部ハ圓柱狀ノ莖ヲ有ス；莖ノ長サ及ビ太サハ植物ノ年齡ニ依リ差アリ。體ハ中肋ノ兩面ヨリ主

枝ト同様ノ部分ヲ再三副出スルニヨリテ分枝ス。余ノ有スル標品ニヨレバ、體ノ高サハ 10-20 cm. アリ。體ハ漸ク成長スルニ從ヒ、主枝ノ葉片ハ腐朽シ、中肋ハ莖ニ變ズ；斯クシテ本植物ハ單條又ハ分岐セル莖ヲ有スルニ至ル。葉片ハ廣線狀—長橢圓形ニシテ、10-15 cm. 長ク、10-17 mm. 廣ク、基部甚ダ圓ク、頂端倒心臟形ニ凹ミテ圓ク、緣邊少シク波皺シ、且ツ鋸齒狀ヲナシ、中肋ヲ存シ、其兩側ヨリ羽狀ノ細脈ヲ少距離ニ發出ス。脈ハ辛フジテ肉眼ニ認ムルヲ得ベク、中肋ヨリ緣邊ノ鋸齒ニ斜上シ、互生ニシテ、規則正シク少距離ニ互ニ並行ス；上部ノ脈ハ頂端ノ凹部ノ兩片ニ於テ灣曲シ、互ニ一點ニ向テ集ル如クナレリ。緣邊ノ鋸齒ハ棘狀ニシテ分岐シ、其枝ハ先端尖リテ反曲ス；同様ノ棘狀枝(單條又ハ分枝セルモノ)ハ又脈及ビ中肋ニ沿フテ出ヅ、是ガ爲ニ體ノ表面ハ通常粗糙ナリ。囊果ハ詳ナラズ。ステイキジアハ披針狀又ハ線狀ニシテ、尖リ、短キ柄ヲ有シ、二縱列ノ四分孢子囊ヲ藏ス。色ハ新鮮ナル時ハ濃紅色ナリト云フ、其乾燥スルニ當リテハ紅褐色トナル。質ハ稍硬キ皮膜様ニシテ、乾燥スルトキハ紙ニ附着セズ。

產地。琉球諸島則チ慶良間島及石垣島(黒岩氏)。

既知產地。印度洋(セーロン、及マダガスカル)、ニウホルランド西部。

第十三圖版。第一圖：いそばせをノ果實ナキ體ノ充分成長シタルモノ、 $\frac{1}{1}$ —第二圖：他ノ標品、 $\frac{1}{1}$ —第三圖：葉片ノ緣

五〇

部ニシテ、縁邊ヨリ生ズル棘狀枝ト脈トヲ示ス、少シク廓大。
—**第四圖**：棘狀枝, $\frac{14.5}{1}$. —**第五圖**：葉片ノ表面ノ一部, $\frac{24.0}{1}$. —**第六圖**：葉片ノ表面ヨリ副出セル小サキ枝ノ背面ノ中央線ニ沿フテ二個ノ毛狀枝ノ出ルヲ示ス, $\frac{9.0}{1}$. —**第七圖**：脈ニ直角ニ切リタル葉片ノ斷面； α , 脈, $\frac{17.5}{1}$. —**第八圖**：葉片ノ面ニ並行シテ切リタル斷面ニシテ、葉片ノ内層ノ細胞ト脈, α , トヲ示ス, $\frac{5.0}{1}$. —**第九圖**：ステッキジアヲ生ジタル葉片ヲ表面ヨリ見タルモノ, $\frac{1.0}{1}$. —**第十圖**：ステッキジア, $\frac{5.0}{1}$. —**第十一圖**：ステッキジアヲ表面ヨリ見タルモノ； α , 中肋, $\frac{24.0}{1}$.



PLATE XIV.

Amansia japonica (Holmes) Okam.

AMANSIÆ (Rhodomelaceæ).

Nom. Jap. *Hizudoshi-gusa*.

Amansia japonica (Holmes) Okam. Contrib. to Knowl. of Mar. Alg. of Jap. III. p. 9, pl. II. fig. 21-22.—*Amansia multifida* var. *japonica* Holmes' New Mar. Alg. from Japan No. 8 in Journ. Linn. Soc., Bot., Vol. XXXI.

Plant high and caulescent, 10-20 cm. in height including the stem. *Stem* subcylindrical, arising from an expanded circular disc (often 1.5 cm. broad), sparingly branched, 3-12 cm. high, about 3 mm. in diameter. *Fronds* arising subfasciculately from the ends or sides of branches, flat, linear, 2-3 times distichously pinnate, 7-10 cm. high, 3-5 mm. broad in the broadest parts, a little narrowed at the basal portion. *Pinnæ* and *pinnulae* alternate or scattered, often a few (3-4) arranged along one side, patent with acute axils, obtuse and in-rolled at the apices. *Midrib* faintly passing through the frond, not furnished with proliferations. It becomes thickened below by cortications and as the frond grows in age, the lower portion gradually passes to the stem. The length of cells of the frond, that is the breadth of the zones, measures 92-280 μ . *Cystocarps* unknown. *Stichidia*, transformed from maginal pinnulae, narrowly linear, 3-5 mm. in length, tapering towards both ends and in-rolled at the apices. *Colour* vinous-red. *Substance* membranaceous and the frond does not adhere to paper in drying.

Hab. On rocks below low tide-mark. Sagami and Bōshū.
Fruit—*Summar*.

Plate XIV. **Fig. 1**: sterile frond of *Amansia japonica*, $\frac{7}{1}$.—**Fig. 2**: sterile frond detached from the stem, showing the mode of ramification, $\frac{1}{1}$.—**Fig. 3**: portion of frond bearing stichidia, $\frac{1}{1}$.—**Fig. 4**: stichidium, $\frac{30}{1}$.—**Fig. 5**: cross-section of lamina, moderately magd.—**Fig. 6**: surface view of lamina showing the zonal arrangement of cells; the dotted lines show that of cells on the other side, moderately magd.—**Fig. 7**: apical portion of sterile frond showing in-rolled apices of laciniae, slightly magd.—**Fig. 8**: cross-section of the stem, moderately magd.

第十四圖版

Amansia Lamouroux.

ひをどしぐさ屬

ひをどしぐさ亞科 (ロドメラ科)

性質. 體ハ直立シ, 薄キ革質ニシテ, バンド狀ヲナシ, 扁平, 時トシテハ下部著シキ中肋ヲ存シ腹背ノ造構ヲ有ス. **多管軸**ハ各關節毎ニ五條ノ周心管ヲ存シ(二對ハ中軸ノ左右ニ, 一個ハ腹部ノ側ニアリ), 中軸ノ左右ナル各對ノ周心細胞ハ其ト同長同形ノ多數ノ細胞ヲ分裂シ, 中軸ノ兩側ニ翼ヲ張レル如ク廣ガレル二層ノ細胞層ヲ生ズ; 此層ノ細胞ハ殆ド水平ノ位置ニ於テ横ニ並列シ, 後生的皮層細胞ヲ被ムルコトナシ, (只各部ノ下部ニハ中軸ノ上下兩面ニ皮層細胞ヲ生ジ, 之ガ爲ニ著シキ中肋ヲナスコトアリ). **主枝**ハ直立シ, 頂端ハ腹面ノ方ニ卷キ, 兩縁ヨリ内長的成長ノ枝ヲ互生ス; 枝ハ廣キ基部ヲ以テ出デ, 時トシテハ遙ニ伸長シテ, 更ニ同様ノ枝ヲ互生シテ以テ分枝スルコトアレドモ, 大抵短クシテ同様ニ互生セル小枝ヲ有スル枝トナルカ, 或ハ長短極リナキ齒狀ノ枝トナル. 此他, 體ノ表面ヨリ副枝ヲ生ズルコトアリ; 副枝ハ各部ノ中肋ニ沿ヒ, 若シクハ各部ノ縁邊ヨリ出ル枝ノ基部(則チ中肋ヨリ出ル側脈)ニ沿ヒテ, 單獨ニ又ハ集合シテ腹面ヨリ生ジ, 單條又ハ分枝ス. 全體ノ主ナル分枝法ハ縁邊ヨリ出ル枝ト表面ヨリ副出スル枝トニ依ル. 各部ノ枝ハ其卷キタル頂端附近ノ背面ノ中央線ニ沿ヒテ早落スベキ毛狀枝ノ一縦列ヲ生ズ. **四分孢子囊**ハ最末位ノ細キ小枝ノ上部ニ生ズ;

五二

其小枝ハ縁邊ヨリ生ズルモノ、若クハ表面ヨリ副出スルモノニシテ、スティキジアノ如ク變成ス。スティキジアハ扁平ニシテ弱ク、時トシテハ他ノ部ト殆ンド區別スベカラザル如ク成リ、多管軸ノ左右ノ兩翼ハ極メテ狹シ；其頂端ハ腹面ノ方ニ卷キ、腹面ニ四分胞子囊ノ二縦列ヲ存ス；四分胞子囊ハ各關節ニ二個ヲ生ジ、周心管ノ腹面ノ方ニ接近セルモノヨリ變成シ、外方ニハ周心管ト同長ノ二個細胞ヲ以テ蔽ハル。精子器ハ未詳。胎原細胞ハ短カキ枝ノ卷キタル頂端部ニ生ジ、簡單ノ形セル毛狀枝ニ生ズ。囊果ハ殆ンド球狀ニシテ果實ヲ熟スベキ小枝ノ背面ニ、單獨ニ又ハ多數集リ生ジ、其小枝ヲ柄トシテ、其ヨリハ稍堅牢ナル枝ニ、一個若シクハ多數密生ス；果皮ハ厚ク、成胞絲ハ集合シ、果胞子ハ棍棒狀ナリ。

諸方ノ溫暖ナル海ニ産スルモノニシテ凡ソ八種アリ；内二種ハ目下本邦附近ニ産スルヲ知ル。

Amansia japonica (Holmes) Okam.

ひをどしぐさ 新稱

Amansia japonica (Holmes) Okam. Contrib. to Knowl. of Mar. Alg. of Jap. III. p. 9, Pl. II, fig. 21-22.—*Amansia multifida* var. *japonica* Holmes' New Mar. Alg. f. Jap., No. 8 in Journ. Linn. Soc., Bot., Vol. XXXI.

本植物ハ丈高クシテ莖ヲ有シ、總高サ 10-20 cm. アリ。莖ハ稍圓柱狀ニシテ、圓ク廣ガレル盤狀根ヨリ直立シ、(根ハ直徑凡ソ 1.5 cm. アリ)、少シク分枝シ、3-12 cm. ノ高サヲ有シ、直

徑凡ソ 3 mm. ニ達ス。體ハ莖ノ頂端又ハ側面ヨリ叢生シ、扁平、線狀ニシテ、再三兩縁ヨリ羽狀ニ分枝シ、7-10 cm. 高ク、最モ廣キ部分ニテ 3-5 mm. ノ幅ヲ有シ、基部少シク細シ。羽枝及ビ小羽枝ハ互生或ハ散生シ、往々 3-4 個ノ枝一方ノ縁邊ニ列シ、廣開シ、腋銳角ヲナシ、頂端鈍圓ニシテ腹面ノ方ニ卷ク。中肋ハ微カニ體ノ中央線ヲ貫通シ、其表面ヨリ枝ヲ副出スルコトナシ；中肋ノ下部ハ後生的皮層ヲ生ジテ増厚シ、體ノ成長スルニ從テ此部ハ漸次莖ト成ル。體ノ表面ヲナシテ橫列セル細胞ノ長サハ 92-280 μ ヲ算ス。囊果ハ詳ナラズ。スティキジアハ縁邊ノ小羽枝ヨリ變成シ、細線狀ニシテ、3-5 mm. ノ長サヲ有シ、其兩端ニ細瘠シ、頂端腹面ノ方ニ卷ク。色ハ葡萄酒様ノ赤味ヲ帶ブ。體質ハ薄膜質、莖ハ軟骨質ニシテ、乾燥スル時ハ紙ニ附着セズ。

產地。低潮線以下ノ岩石ニ生ズ。江ノ島及ビ房州。
四分孢子囊一夏季。

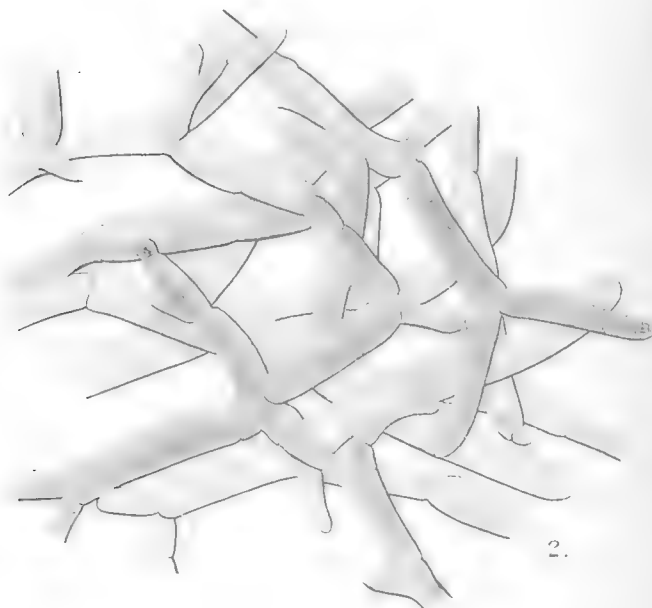
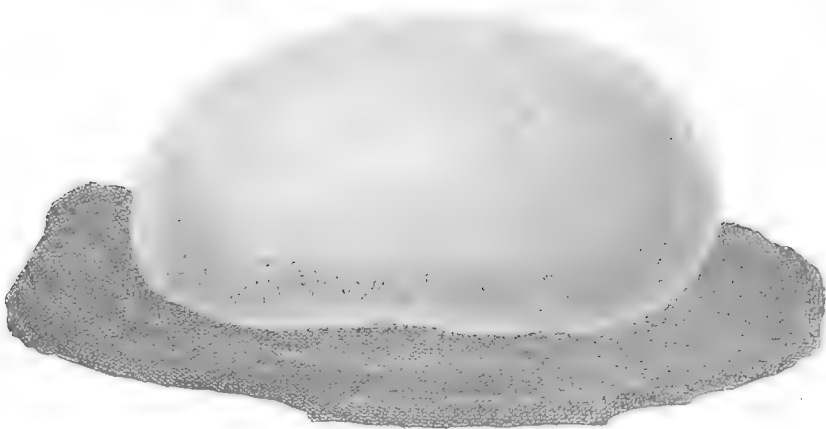
本植物ハ本邦特産ノ種類ニシテ英ノ Holmes 氏ガ初メテ記載スル所ナリ、而シテ余ノ是ヲ別ニ一種トシタル論點ハ上記引用書中余ノ論文ニ委シ。

第十四圖版。第一圖：ひをどしぐさノ實ヲ熟セザル體、 $\frac{1}{1}$ —第二圖：實ヲ熟セザル體ノ一ヲ莖ヨリ離シテ其分枝ノ狀態ヲ示ス、 $\frac{1}{1}$ —第三圖：スティキジアヲ有スル體ノ一部、 $\frac{1}{1}$ —第四圖：スティキジア、 $\frac{30}{1}$ —第五圖：葉ノ橫斷面、廓大。—第六圖：

五四

葉ヲ表面ヨリ見タルモノニシテ,中軸ノ兩側ナル翼部ノ細胞ノ横列セル狀ヲ示ス,點線ハ裏面ノ細胞ノ横列スル界ヲ示ス,廓大.—**第七圖**:各部ノ枝ノ頂端腹面ノ方ニ卷クヲ示ス,廓大.—**第八圖**:莖ヲ横斷シテ在來ノ葉片ノ兩面ニ後生的皮層ヲ生ジタル狀ヲ示ス,廓大.





3.

2.

5.

4.

6.

7.

PLATE XV.

Boodlea coacta (Dickie) Murray et De Toni.

ANADYOMENEÆ (Valoniaceæ).

Nom. Jap. *Awo-mogusa*.

Boodlea coacta (Dickie) Murray et De Toni Journ. Linn. Soc., Bot., XXV, p. 243-245, pl. XLIX; De Toni Syll. Alg., I, p. 363; Wille in Engl. u. Prantl's Natürl. Pflanzenfam., I., Theil 2., p. 151.—*Cladophora coacta* Dickie Journ. Linn. Soc., Bot., XV, p. 451.

Fronde depresso-globular or sub-hemispherical, 2-7 cm. in expansion, attached to substratum by its base, spongiose, composed of densely anastomosing cylindrical cells. As the frond grows in size, the older cells decay, making hollow at its base. Cells 2-10 times long as broad, branching repeatedly in every direction, with one or two ramuli at nodes, adhering to each other and other objects coming in contact with the frond by scutate tenaculae which arise from the apices or sides of ramuli. *Colour* grass-green.

Hab. On sandy rocks and various algae between tide marks. Ishigaki-jima (Kuroiwa), Ogasawara-jima (Matsumoto), Tosa, Sunosaki and Shirahama (Prov. Bōshū); Ōshima Harbour (Challenger).

Hitherto-known: Isl. Mangaia in the Pacific, lat. 21° 57' S., long. 158° W. Greenwich, [Gill under the name of *Microdictyon Montagnei* Harv. in Dickie's Algae of Mangaia (Journ. Linn. Soc., Bot., XV, p. 33)].

In the course of my studying this alga, I found in the Herbarium of the Tōkyō Imperial University a specimen labelled *Cladophora composita* Harv., collected by C. Wright in Loochoo

Islands, distributed from "Herbarium of the U.S. Pacific Exploring Expedition under Commanders Ringgold and Rodgers, 1853-56." In Harvey's *List of Plants collected by C. Wright* we do not find *Cladophora composita* Harv., but we know a plant with the same nomenclature established by Hooker and Harvey, which is known from Island Mascaren and Honolulu harbour (De Toni Syll. Alg. I, p. 347). This specimen kept in the Herbarium is proved, under microscopical examination, to be nothing else but *Boodlea coacta* and not *Cladophora composita* H. et H.

Plate XV. **Fig. 1:** plant in nat. state and size.—**Fig. 2:** portion of frond showing anastomosing of cells, $\frac{37}{1}$.—**Fig. 3-4:** some of filaments detached to show the mode of branching; fig. 3, $\frac{50}{1}$; fig. 4, $\frac{37}{1}$.—**Fig. 5, 6 and 7:** tenaculæ formed on apices or sides of cylindrical cells, $\frac{85}{1}$.

學 語 解

副出, proliferate, prolific; 尋常ニ出ヅベキ方法又ハ位置ヨリ枝若クハ之ニ類スルモノ、出ルニアラズシテ、後其然ラザル部分ヨリ又ハ方法ニヨリ出ルヲ云フ。

副枝, proliferated or proliferous branch; 全上ノ如キ方法又ハ位置ヨリ出タル枝又ハ之ニ類スルモノヲ云フ。故ニ副出シタル枝トカ又ハ枝ヲ副出ストカ云フトキハ其枝ハ即チ副枝ナリ。

楔形, cuneiform, cuneate; 下部細ク上部稍廣キ形ヲ云フ、則チ羽子板ノ如キ形狀ヲ云フ。

扇狀, flabelliform, flabellate, fan-shaped; 扇ヲ開キタル如キ形狀ヲ云フ。此形ハ強チ一ノ面ニ扇狀ヲナサズトモ、枝ノ再三分岐シテ皆殆ド同一ノ高サニ達シ、且ツ枝皆廣開スルトキハ全體ノ輪廓ニ依テ扇狀ト云フ。

毛狀枝, Haarblättern; 複數 專ラ ロドメラ 科ノ植物ニ存スル毛狀體ニシテ、單列ノ細胞ヨリ成リ、分岐スルアリ、分岐セザルアリ; 早落スルアリ、永存スルアリ; 其早落スルモノヲ fibrillae トシテ區別ス。

主枝, Hauptspross, or Main branch; 別ニ一定ノ意義ナケレドモ、專ラ根ヨリ直立スル第一番目ノ枝則チ幹又ハ莖ニ相當スルモノニ用キ、又ハ多數ノ内最モ長キモノナドニ用キル。

最末位, ultimate; 屢々枝ノ分枝スルトキハ其最末ノ部分ノ枝ヲ最末位ノ枝則チ最末枝ト云フ。

(五)

羽枝, *pinnae*; 枝ノ兩側ヨリ分枝スルトキハ之ヲ羽狀分枝ト云ヒ其分レ出タル枝ヲ羽枝ト云フ。

小羽枝, *pinnulae*; 複數 同上ノ如ク再三羽狀ニ分枝スルトキハ其最末ノ羽枝若クハ最末ナラザルモ羽枝ノ小ナルモノヲ小羽枝ト云フ。

倒心臟形, *obcordate*; たばこノ葉ヲ倒ニシテ其葉片ノ基部ノ凹ミタル如キヲ云フ則チ トランプノハートノ倒ニナリタル凹ミノ所ノ如キ形狀ヲ云フ。

散生, *scattered*; 分枝ノ方法別ニ一定ノ規則ナク, 互生, 對生, 輪生ナド相混ジテ出デ, 或ハ一側部ヨリ二三枝出デ, 他ノ側ヨリ一枝出ルナド不規則ナル分枝法ニ用キル。

斜上, *ascending*; 總テ斜ニ上ノ方ニ傾ケル位置ヲ取ルモノニ用キル。強チ莖トカ枝トカニ限レルニハアラズ。

テナキュラ; *tenacula*. 專ラ綠藻類ノ *Valoniaceae* 科ノ植物ニ存スル附着器ニシテ, 一個ノ細胞ヨリ變成シ, 吸盤狀ニ開張シテ相互ニ又ハ他物ニ付着スル器官ヲ云フ。

第十五圖版

Boodlea Murray et De Toni.

あをもぐさ屬

うきをりさう亞科 (パロニア科)

性質. 體ハ海綿様ニシテ, 數回分岐セル圓柱狀ノ細胞ヨリ成リ; 細胞ハ各方面ニ分岐シ, テナキュラ ト稱スル一種ノ吸盤狀附着器ヲ以テ相互ニ固着錯綜ス; 細胞ノ長サハ其幅ノ 2-10 倍ナリ.

一屬一種ニシテ彼ノチャレンヂャー探檢ノ際我大島港ニ於テ始メテ發見シ, 次イデ太平洋諸島中ノ マンガイア 島 (南緯 $21^{\circ} 57'$, 西經 158°) ニ於テ採集シタルモノナリ.

Boodlea coacta (Dickie) Murr. et De Toni.

あをもぐさ 新稱

Boodlea coacta (Dickie) Murray et De Toni Journ. Linn. Soc., Bot., XXV, p. 243-245, pl. XLIX; De Toni Syll. Alg., I, p. 363; Wille in Engl. u. Prantl's Natürl. Pflanzenfam. I, Th. 2, p. 151.—*Cladophora coacta* Dickie Journ. Linn. Soc., Bot., XV, p. 451.

體ハ稍扁キ球狀又ハ半球狀ニシテ直徑 2-7 cm. ノ廣ガリヲ有シ, 底部ヲ以テ海底若シクハ他ノ海藻上ニ附着シ, 海綿様ニシテ, 密ニ錯綜セル圓柱狀細胞ヨリ成ル. 體ノ大サノ増スニ從テ老キ細胞ハ枯朽スルヲ以テ, 體ノ底部ハ往々空虛

五六

トナル。細胞ハ其幅ノ2-10倍長ク、各方面ニ屢々分岐シ、其節々ヨリ一二ノ枝ヲ出シ、吸盤狀ノ附着器則チテナキュラト稱スルモノヲ以テ互ニ固着シ又他物ニ附着ス；テナキュラハ枝ノ頂端或ハ側面ヨリ一個又ハ數個ヲ生ズ。色、純綠色。質、海綿様ニシテ乾燥スルトキハ紙ニ附着セズ。

產地。潮線間ノ砂ヲ被ムレル岩石若シクハ諸他ノ海藻上ニ附着ス。石垣島(琉球)、小笠原島、土佐、洲ノ崎及根本(房州)。大島港(チャレンヂャー)。

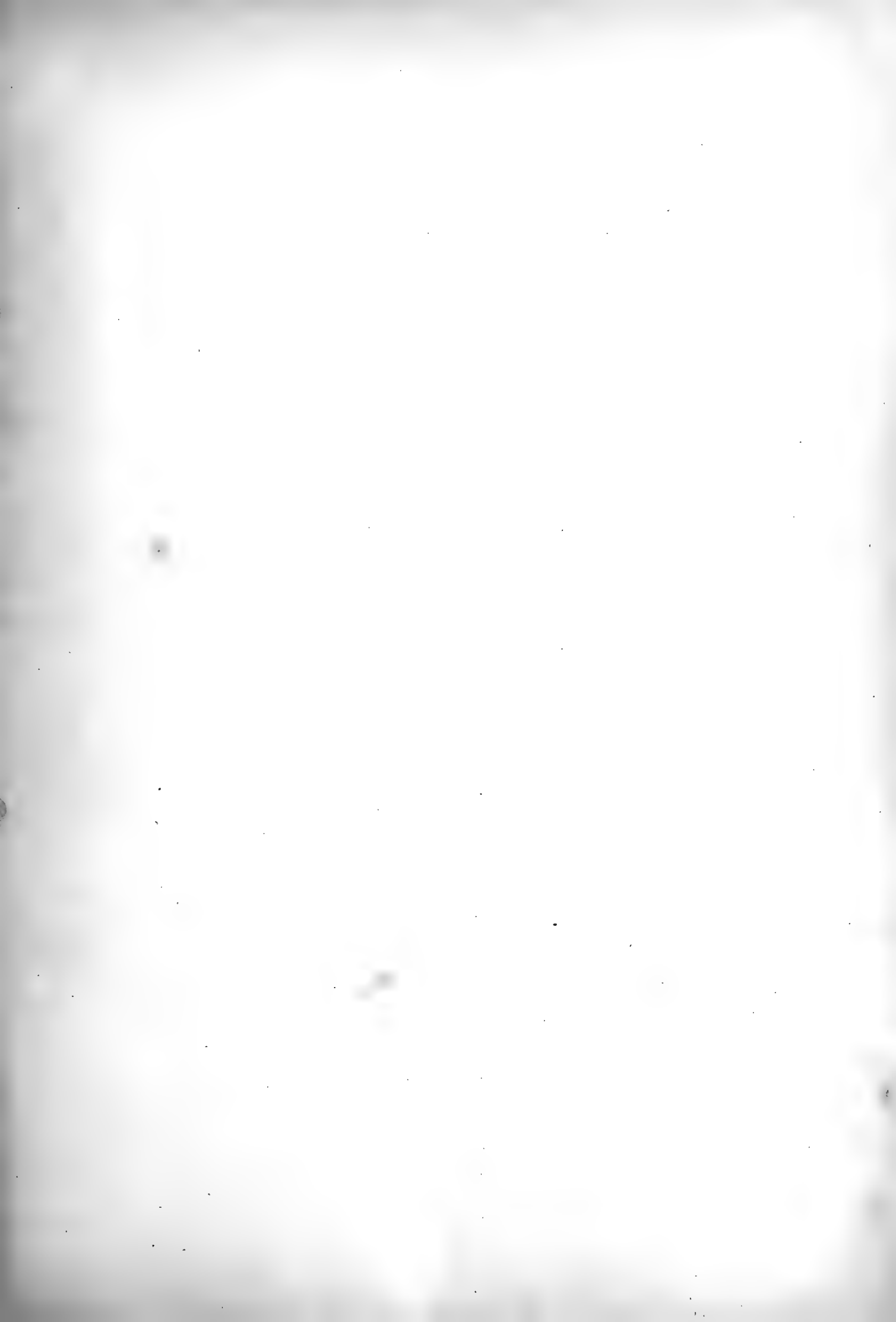
既知產地。太平洋中マンガイア島[ギル氏ガ *Microdictyon Montagnei* Harv. ト思ヒテ採集シタルモノニシテ、Dickie 氏ノ *Algae of Mangaia* 中ニ記シアリ (Journ. Linn. Soc., Bot., XV, p. 33)]。

本植物ノ研究ヲナスニ際シ、余ハ我東京帝國大學植物學敎室ニ藏スル標品中ニ *Cladophora composita* Harv. ト記シタル標品アルヲ見タリ。其標品ハ C. Wright 氏ガ琉球ニ於テ採集シタルモノニシテ、“一千八百五十三年ヨリ五十六年ニ至ル間、提督 Ringgold 及ビ Rodgers 氏ノ監督ノ下ニ爲サレタル合衆國太平洋探檢ノ際ノ植物標品”ト題セル表記ヲ有セリ。今 C. Wright 氏ノ採集ニ係ル海藻ノ目錄ヲ Harvey 氏ノ公ニシタルモノ、則チ Harvey's List of Plants Collected by C. Wright chiefly in Japan, etc. ヲ見ルニ、*Cladophora composita* Harv. ナルモノアラズ；然レドモ、吾人ハ *Cladophora composita* Hook. et Harv. ト云ヘル海藻ノ マスカレン 島及ビ布哇 ホノルル 港ニ於テ採集セラレタルモノアルヲ知ル (De Toni Syll. Alg. I, p. 347)。依テ我大學ニ藏スル標品ヲ顯微鏡下ニ照スニ、全ク *Boodlea coacta* ニシテ *Cladophora composita* Hook. et Harv. ニハアラズ。此故ニ本種ハ

既ニ已ニ C. Wright 氏ノ採集ニ係レル所ナルニ、學者ノ之ヲ顧ルモノアラザリシガ爲ニ、Challenger 探檢ノ時更ニ之ヲ採集シ、始メテ其奇異ナル造構ニ心付キ、Dickie 氏之ヲ *Clodophora coacta* トシテ世ニ公ニシ、次イデ De Toni 氏ノ注意ニ基キテ、G. Murray 氏之ヲ一新屬トシタルナリ、

第十五圖版. **第一圖:** あをもぐさノ自然ノ状態, $\frac{1}{1}$.—**第二圖:** 體ノ一部ヲ解キテ細胞ノ錯綜スル狀ヲ示ス, $\frac{37}{1}$.—**第三—四圖:** 錯綜スル絲ノ一部ヲ取リテ細胞ノ分岐スル狀ヲ示ス; 三圖, $\frac{50}{1}$; 四圖, $\frac{37}{1}$.—**第五—七圖:** 圓柱狀細胞ノ頂端及ビ側部ニテナキュラノ形成セラレ且ツ他ノ細胞ニ附着スル狀, $\frac{85}{1}$.







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ILLUSTRATIONS
OF THE
MARINE ALGÆ OF JAPAN.

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第一卷第四冊

理學博士岡村金太郎著

ILLUSTRATIONS OF THE MARINE ALGÆ OF JAPAN.

Vol. I. No. 4.

BY

K. OKAMURA, *Rigakuhakushi.*

TOKYO.

1901.

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ALGÆ JAPONICÆ EXSICCATÆ.

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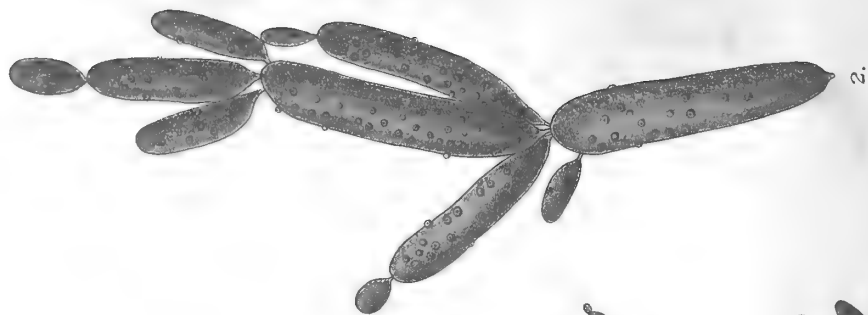
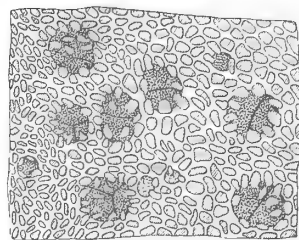
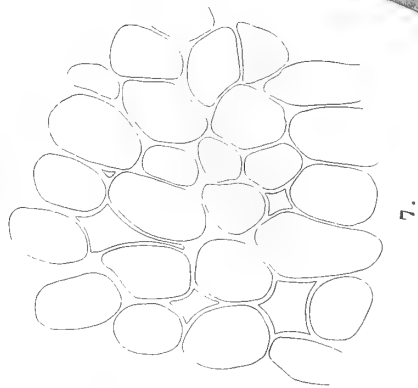
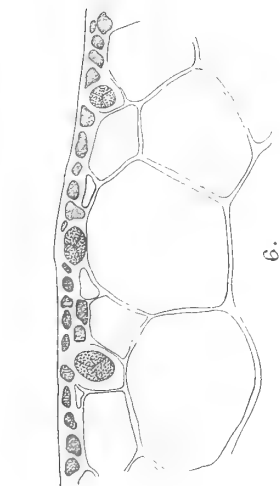
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| <ol style="list-style-type: none"> 1. <i>Nemalion pulvinatum</i> Grun. 2. <i>Scinaia furcellata</i> (Turn.) Bivona. 3. <i>Brachycladia australis</i> Sond. 4. <i>Gelidium divaricatum</i> Martens. 5. <i>Gelidium repens</i> Okam. 6. <i>Suhria Japonica</i> Harv. 7. <i>Acanthopeltis japonica</i> Okam. 8. <i>Chondrus elatus</i> Holmes. 9. <i>Gigartina tenella</i> Harv. 10. <i>Gymnogongrus flabelliformis</i> Harv. 11. <i>Callophyllis japonica</i> Okam. 12. <i>Callophyllis</i> (<i>Microcoelia</i>) <i>Chilensis</i> (J. Ag.) 13. <i>Gracilaria Textorii</i> (Suring.) J. Ag. 14. <i>Hypnea musciformis</i> (Wulf.) Lamour. 15. <i>Lomentaria catenata</i> Harv. 16. <i>Champia parvula</i> (Ag.) Harv. 17. <i>Martensia australis</i> Harv. 18. <i>Hemineura Schmitziana</i> De Toni et Okam. 19. <i>Delisea pulchra</i> (Grev.) Mont. 20. <i>Laurencia dendroidea</i> J. Ag. 21. <i>Laurencia paniculata</i> J. Ag. 22. <i>Symphyocladia angusta</i> Okam. 23. <i>Chondria crassicaulis</i> Harv. 24. <i>Digenea simplex</i> (Wulf.) Ag. 25. <i>Dasya scoparia</i> Harv. | <ol style="list-style-type: none"> 26. <i>Ptilota dentata</i> Okam. 27. <i>Ceramium paniculatum</i> Okam. 28. <i>Ceramium gracillimum</i> Griff. et Harv. 29. <i>Gloiopeltis tenax</i> (Turn.) J. Ag. 30. <i>Grateloupia lancifolia</i> (Harv.) Okam. 31. <i>Grateloupia acuminata</i> Holmes. 32. <i>Grateloupia filicina</i> (Wulf.) Ag. 33. <i>Polyopes Polyideoides</i> Okam. 34. <i>Prionitis angusta</i> Okam. 35. <i>Chondrococcus japonicus</i> (Harv.) 36. <i>Cystophyllum fusiforme</i> Harv. 37. <i>Pelvetia Babingtonii</i> (Harv.) De Toni. 38. <i>Dictyota dichotoma</i> (Huds.) J. Ag. 39. <i>Padina arborescens</i> Holmes. 40. <i>Haliseris prolifera</i> Okam. 41. <i>Haliseris undulata</i> Holmes. 42. <i>Colpomenia sinuosa</i> (Roth.) Derb. et Sol. 43. <i>Hydroclathrus cancellatus</i> Bory. 44. <i>Myelophycus caespitosa</i> (Harv.) Kjellm. 45. <i>Letterstedtia Japonica</i> Holmes. 46. <i>Cladophora Wrightiana</i> Harv. 47. <i>Caulerpa anceps</i> Harv. 48. <i>Caulerpa Okamurai</i> Weber. 49. <i>Codium mamillosum</i> Harv. 50. <i>Codium mucronatum</i> J. Ag. |
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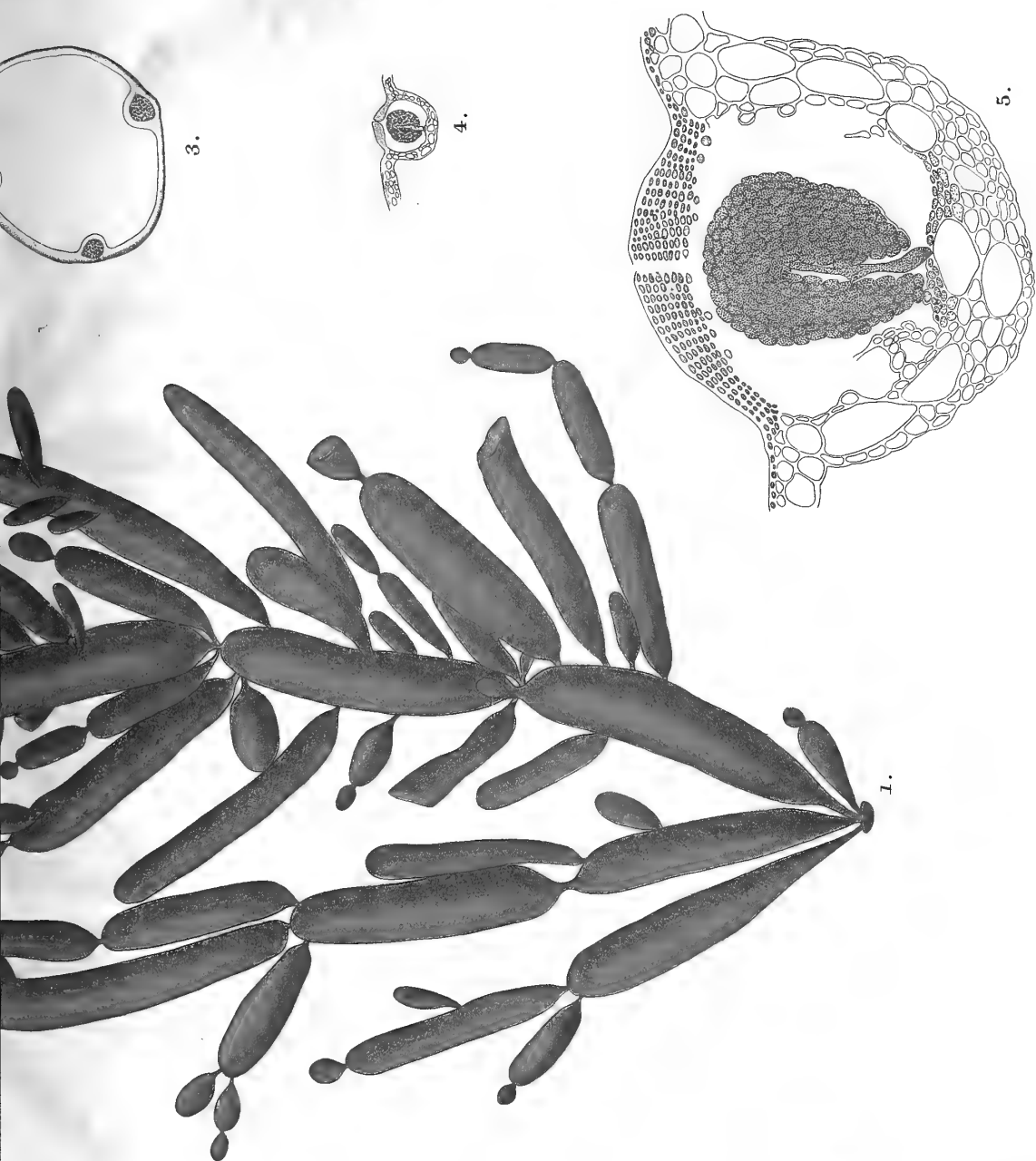
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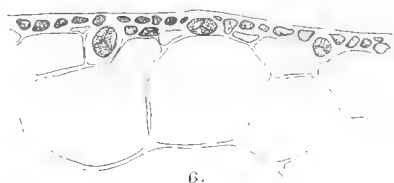
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Erythrocolon Muellieri (Sond.) J. Ag.
ふくろつふぎ新柄

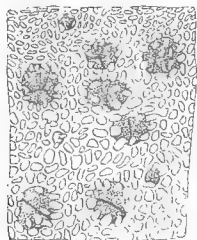
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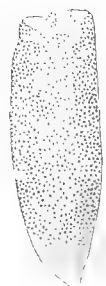
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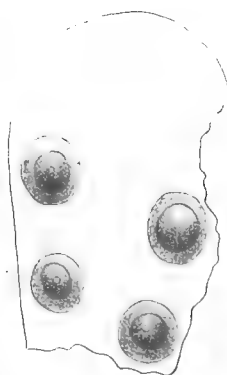
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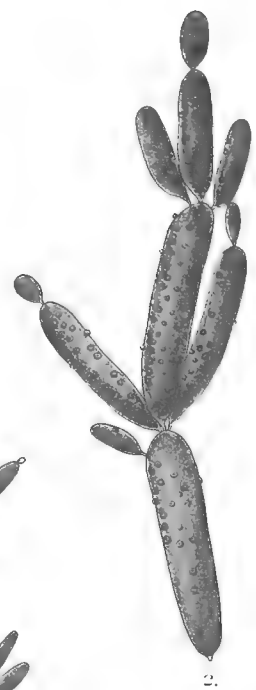
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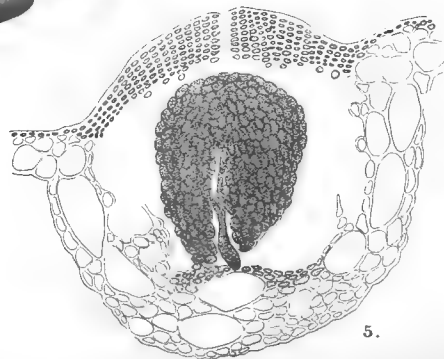
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5.

Erythrocolon Muellerei (Sond) J. Ag.
ふくろつふぎ新種



PLATE XVI.

Erythrocolon Muelleri (Sond.) J. Ag.

RHODYMENIACEÆ.

Nom. Jap.: *Fukuro-tsunagi*.

Erythrocolon Muelleri J. Ag. Anal. Algolog. Cont., III, (1896), p. 90; De Toni Syll. Alg., Vol. IV, p. 585.—*Chylocladia Muelleri* Harv. Phyc. Austr., (1860), tab. 138; J. Ag. Epicr., (1876), p. 302.—*Chylocladia ? valida* (Kuetz.) J. Ag. Till Alg. Syst., VI, p. 24.—*Lomentaria valida* Kuetz. Tab. Phyc., Vol. XV, (1865), p. 30, t. 85.

Fronde single or caespitose, erect, rising from a common scutate disc, branching in a somewhat trichotomous manner, and by constrictions it is divided into joint-like, cylindrical or oblong internodes, attaining the length of 30–40 cm. when fully grown. Branches patent, more or less trichotomous; every internode generally giving birth at its summit to three similar ones, sometimes more numerous, sometimes fewer. Proliferous branches also arise (more or less densely) on all sides from several portions of internode, from the middle as well as from the filiform neck which connects two internodes. All the internodes are separated by slender solid filiform nodes or isthmus, about 1–1.5 mm. long. The lowest joints are clavate or oblong, gradually or abruptly tapering into short, solid, cartilaginous stem. The middle are the longest, cylindrical or oblong, gradually becoming shorter and shorter above, and almost elliptical in terminal ones, with the diameter 3–10 mm. in the broadest part. Their length varies according to the position; those of the median portion are often

8-10 times as long as the diameter; the shorter ones subequal to or twice as broad.

The *tetrasporangia* are densely scattered all over the internodes, excepting the upper and lower ones. The *cystocarps* are minute, densely scattered over the internodes; the greater part of spore-cavities is buried within the cavity of frond, being only slightly prominent over the surface of frond, where the cortical layer is transformed into a thick pericarp, provided with a narrow carpostome.

The frond contains abundant mucilaginous substance in its cavity. Its substance is membranous; the membrane is lubricous, not very thin, rather tough and tenacious and resist long the action of fresh water. The membrane is internally composed of a layer of large, hyaline roundish or polyhedral cells, externally corticated by a few layers of minute, coloured cellules. *Colour*, when fresh, deep blood red, fading to yellowish or carneous red in fresh water. In drying the plant closely adheres to paper.

Hab. On rocks, shells etc., commencing within tide marks and extending to the depth of 20 fathoms. Shima, Himakajima (Mikawa), Enoshima and Misaki (Sagami), Bōshū. Fruits—May.

Hitherto-known: New Holland.

In making the identification of the present plant, I have not been able to study any referable specimen of *Erythrocolon Muelleri*, excepting the illustrations given by Harvey and Kütz-
ing. Nevertheless, I have some degree of confidence in referring our plant to the present species. Only, in our plant, a chain of joints directly continuing from the stem seems more or less distinguishable from lateral branches by their thickness,

giving to it the appearance of a main shoot from which the branches arise on all sides. The size of the alga is much larger in ours than in the Australian one of which Harvey measured 4-6 inches in length. Proliferated branches are, again, very numerous and are of rather common occurrence in ours; but Harvey gives no description about them, though he shows in his illustration some proliferous segments arising from the lower articulation.

Plate XVI. **Fig. 1:** Frond of *Erythrocolon Muelleri* in nat. size.—**Fig. 2:** portion of frond bearing cystocarps, $\frac{1}{1}$.—**Fig. 3:** cross-section of a frond bearing cystocarps, $\frac{5}{1}$.—**Fig. 4:** longitudinal section of a cystocarp, slightly magnified, $\frac{12}{1}$.—**Fig. 5:** the same more highly magnified, $\frac{80}{1}$.—**Fig. 6:** portion of a cross-section of frond bearing tetrasporangia, $\frac{220}{1}$.—**Fig. 7:** portion of the inner layer of a younger part of frond viewed from the inner surface, showing the absence of filaments, $\frac{220}{1}$.—**Fig. 8:** portion of frond bearing tetrasporangia viewed from the surface, $\frac{220}{1}$.—**Fig. 9:** segment bearing tetrasporangia, $\frac{3}{1}$.—**Fig. 10:** portion of a longitudinal section of frond cutting through a node, $\frac{91}{1}$.—**Fig. 11:** cystocarps seen from above, $\frac{12}{1}$.

第十六圖版

Erythrocolon J. Agardh.

ふくろつなぎ屬

だるす科

性質. 體ハ圓柱狀ニシテ中空, 内部ニ著シク粘質ヲ含ミ, 所々結節ノ如ククビレ, 節間部ハ短キ柄ヲ以テ離レ, 二—三叉狀又ハ輪生狀ニ分枝シ, 副枝ヲ生ズ. 造構ハ二層ヨリ成ル: 内層ハ大ナル球—多角形ノ無色ナル細胞—二層ヨリ成リ, 外層ハ小サキ紅色ノ皮層細胞ノ—二層ヨリ成ル; 而シテ體腔内ヲ通スル絲狀細胞ナク, 又腔部ヲ區劃スル隔膜ナシ, 只節部ハ内層ノ細胞ヲ以テ充塞シ, 彼是相通スルコトナシ; 成長點ハ放射狀ニ列セル細胞ヨリ成ル. **四分孢子囊**ハ體ノ全面ニ散布シ, 皮層細胞ニ生ジ, 三角錐様ニ分裂ス. **囊果**ハ體ノ表面ニ膨レ, 厚キ果皮ヲ存シ, 頂端ニ狹キ果孔ヲ開ク; 仁ハ—ノ團塊ヲナシテ, 細長キ柄ノ如キ細胞ヨリ生ジ, 此長キ細胞ハ甚ダ小ナル胎座ヨリ出ヅ; 而シテ此團塊ハ數多ノ成胞裂絲ノ各關節ガ順次ニ孢子ヲ形成シ而シテ密ニ相接着シテ成レルモノナリ. 仁ノ周圍ニ網狀ノ組織ナシ.

此屬ハ體ノ節間短柄ヲ以テ相連ナルコトト, 體ノ内部ニ絲狀組織ナキトニ依リテ *Chylocladia* 屬ト區別セラル. 本屬ノ植物ハ三種ニシテ皆濠洲ニ産シ, 其内本邦ニ産スルハ一種ノミナリ.

Erythrocolon Muelleri (Sond.) J. Ag.

ふくろつなぎ (岡村 命)

Erythrocolon Muelleri J. Ag. Anal. Algolog. Cont. III, (1896), p. 90;
 De Toni Syll. Alg., Vol. IV, p. 585.—*Chylocladia Muelleri* Harv. Phyc.
 Austr., (1860), tab. 138; J. Ag. Epicr., (1876), p. 302.—*Chylocladia*?
valida (Kuetz.) J. Ag. Till Alg. Syst., VI, p. 24.—*Lomentaria valida*
 Kuetz. Tab. Phyc., Vol. XV, (1865), p. 30, t. 85.

體ハ單獨又ハ概テ叢生シ、直立シ、圓盤狀附着器ヨリ立チ、
 稍三叉狀ニ分枝シ、種々ノ距離ニ於テクビレタル爲ニ圓柱狀
 又ハ長橢圓形ノ節間部ニ分レ、充分成長スルトキハ 30-40 cm.
 ニ達シ、太サ 3-10 mm. ヲ有ス。枝ハ廣開シ、多少三叉狀ヲナス;
 各節間部ハ通常其上部ヨリ三條ノ同様ナル枝ヲ發出ス、其數
 ハ或ハ多ク或ハ少ナシ。副枝ハ又節間部ノ諸部ヨリ各方面
 ニ出ヅ(多少密ニ); 則チ節間部ノ中央部ヨリ並ニ節部ノ細キ
 柄ノ如キ所ヨリ出ヅ。節間部ハ凡テ細クシテ、實質ナル、1-
 1.5 mm. 長キ節則チ柄ヲ以テ相離ル。最下部ノ節間ハ棍棒狀
 又ハ長橢圓形ニシテ、漸々ニ若クハ急ニ短莖ニ終ル; 莖ハ實
 質ニシテ軟骨質ナリ; 中央ノ節間ハ最モ長ク、圓柱狀又ハ長
 橢圓形ニシテ、上方ニ漸々短カクナリ、頂部ニ至リテハ殆ド
 橢圓形ヲナス。節間ノ長サハ部分ニ因テ異ナリ; 中央ノモノ
 ハ往々其徑ノ 8-10 倍長ク; 其短キモノハ徑ト同長又ハ畧ボ二
 倍長シ。

四分孢子囊ハ上部及ビ下部ノ節間ヲ除ク外總テノ節間
 ニ密ニ散在ス。囊果ハ小ニシテ、密ニ節間ニ散在ス; 其果腔

ノ大部分ハ體腔中ニ埋マリ、只上部ノミ僅ニ體ノ表面ニ隆起ス；其部ノ皮層ハ厚キ果皮ヲナシ、果皮ノ頂端ニ狹キ果孔ヲ通ズ。

體ハ其腔内ニ粘質物ヲ多量ニ含有ス。體質ハ膜質ニシテ甚ダ滑ナリ、然レドモ甚シク薄カラズ、稍強靱ニシテ永ク之ヲ淡水中ニ置クモ容易ニ壞頽スルコトナシ。體膜ノ内部ハ無色ニシテ、球狀又ハ多角形ノ大ナル細胞ノ一層ヨリナリ、外部ハ小サキ紅色ノ小細胞ノ一二層ヨリ成ル。色ハ新鮮ナルトキハ濃血紅色ニシテ、淡水中ニテハ肉紅色又ハ淡黃紅色トナル。體ハ乾燥スルトキハ紙ニ密着ス。

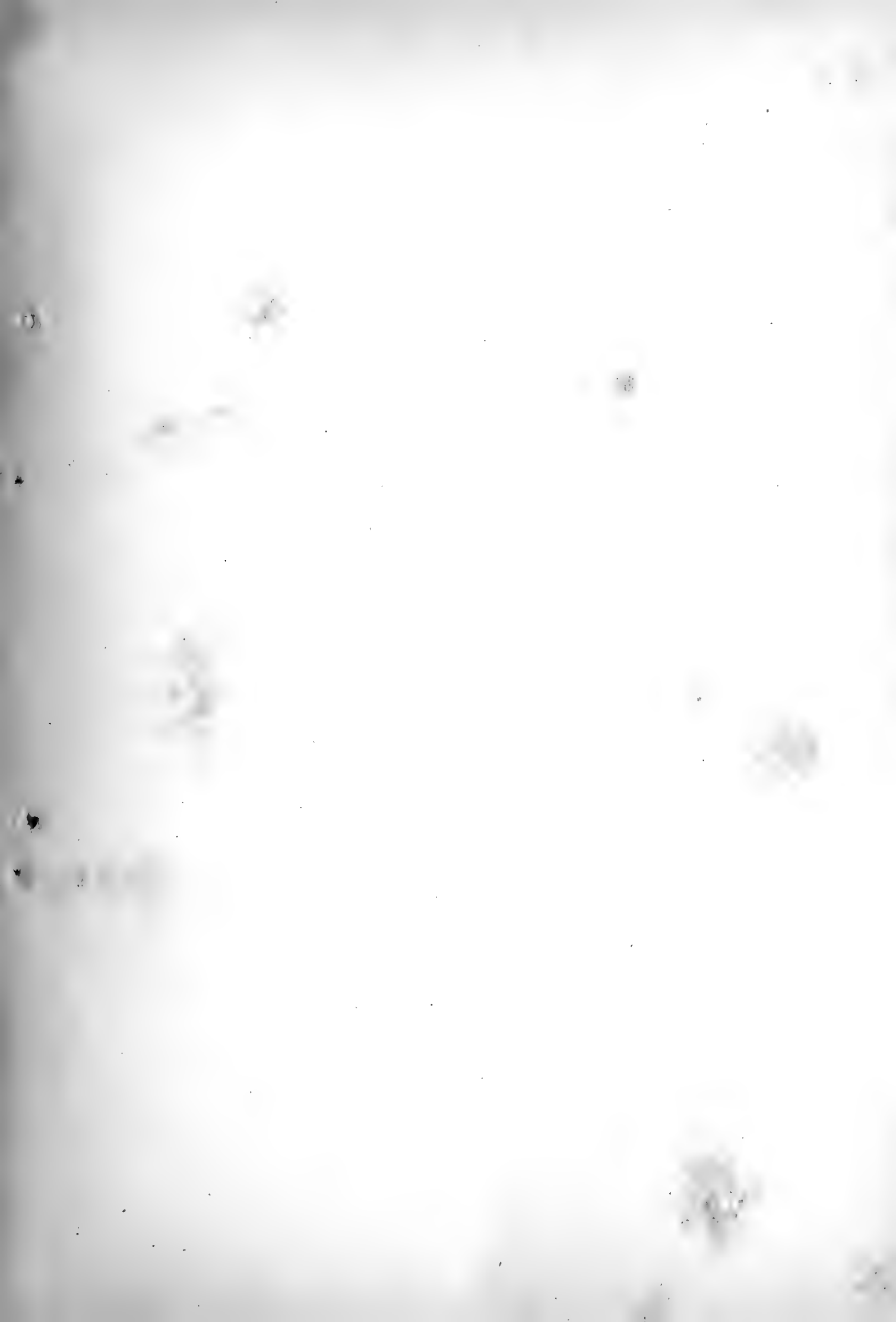
產地。岩石、貝殼等ノ上ニ生ズ；潮線間ヨリ二十尋ノ深所ニ互ル。志摩、日間賀島(參河、名倉氏)、江ノ島及三崎(相模)、房洲。果實一五月。

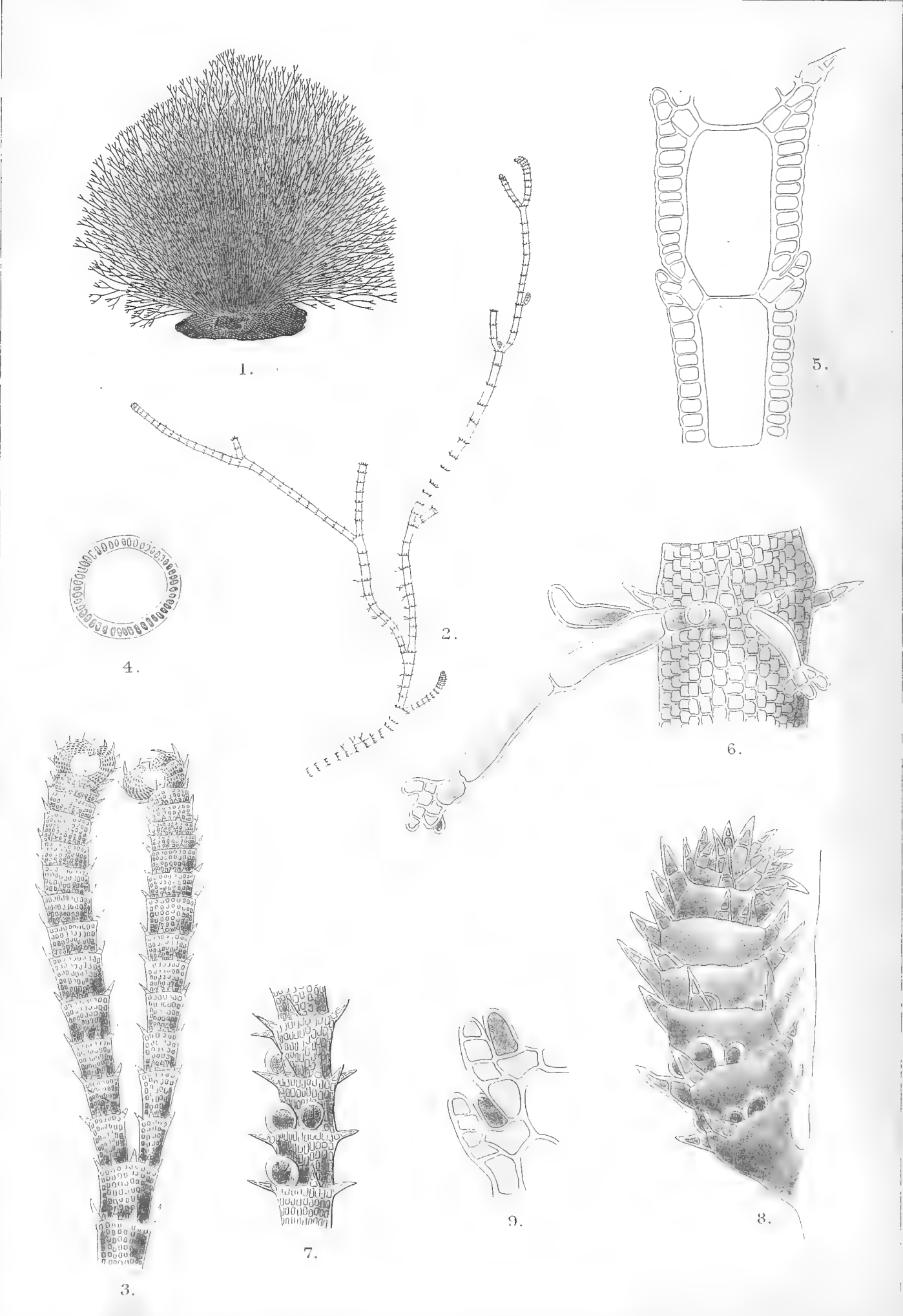
既知產地。ニウホルランド。

本植物ヲ研究スルニ當リ Kützing Tab. Phyc., Vol. XV, t. 85. 及ビ Harvey Phyc. Austr. tab. 138. ニ掲ゲタル圖ヲ見タル外、本種ノ正シキ標品ヲ見ル能ハザリシカドモ、此海藻ヲ以テ此種ナリト斷定スルハ余ノ深ク信ズル所ナリ。但シ、本邦産ノ此植物ニ於テ、下部ノ莖ヨリ直接ニ連ナレル節間ハ其太サノ大ナルガ爲ニ、側部ヨリ出ル枝ト多少區別セラル、モノ、如クシテ、枝ハ之ヲ莖トシテ各方面ニ出ルガ如ク見ユ。體ノ大サモ亦 オーストラリア 産ノモノヨリハ遙ニ大ニシテ オーストラリアノモノニ就テハ Harvey 氏ハ長サ 4-6 インチナリト云フ、更ニ、副枝モ亦本邦ノモノニハ多ク出デ、其之アルハ殆ド

通常ノ如シ;然レドモ Harvey 氏ハ氏ノ圖說ニ下部ノ節間ヨリ
 少數ノ副枝ヲ出スモノヲ畫キタル外,之ニ就テ何等ノ記載ス
 ル所ナシ.

第十六圖版. 第一圖: ふくろつなぎノ體, $\frac{1}{1}$.—第二圖: 囊
 果ヲ有スル體ノ一部, $\frac{1}{1}$.—第三圖: 囊果ヲ有スル體ノ横斷面,
 $\frac{5}{1}$.—第四圖: 囊果ノ縦斷面ヲ少シク廓大シテ示ス.—第五圖:
 同上ノモノヲ稍大ニス, $\frac{80}{1}$.—第六圖: 四分孢子囊ヲ有スル體
 ノ横斷面ノ一部, $\frac{220}{1}$.—第七圖: 體ノ幼キ部ノ内層ヲ體ノ内面
 ヨリ見タルモノニシテ, 絲狀細胞ナキヲ示ス, $\frac{220}{1}$.—第八圖:
 四分孢子囊ヲ有スル體ノ一部ヲ表面ヨリ見タルモノ, $\frac{220}{1}$.—
 第九圖: 四分孢子囊ヲ有スル節間, $\frac{3}{1}$.—第十圖: 結節部ノ縦斷
 面ノ一部, $\frac{91}{1}$.—第十一圖: 囊果ヲ上ヨリ見タルモノ, $\frac{12}{1}$.





K Okamura. del.

Ceramium clavulatum Ag.

とげいぎす新鱗

PLATE XVII.

Ceramium clavulatum Ag.

CERAMIACEÆ.

Nom. Jap.: *Toge-igisu*.

Ceramium clavulatum Ag. Hauck's Die Meeresalg., p. 113; Bornet Les Alg. d. Schousboe p. 335; De Toni Phyc. Jap. Nov. p. 36.—*Centroceras clavulatum* Mont., J. Ag. Sp. Alg., Vol. II, p. 148; Id. Epicr., p. 108; Harv. Ner. Bor. Amer. tab. 33 C; Kuetz. Phyc. Gener., tab. 46, fig. V.—*Centroceras cryptacanthum* Kuetz. Sp. Alg. p. 688; Id. Tab. Phyc. Vol. XIII, tab. 17.—*Centroceras inerme* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c.—*Centroceras micracanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c., tab. 18.—*Centroceras leptacanthum* Kuetz. Sp. Alg., p. 689; Id. Tab. Phyc., l.c., tab. 18.—*Centroceras macracanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c., tab. 19.—*Centroceras hyalacanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c.—*Centroceras oxyacanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c., tab. 20.—*Centroceras brachiacanthum* Kuetz. Tab. Phyc., l.c., p. 8., tab. 20.

Fronds caespitose, often forming a roundish tuft, filiform, 2–5 cm. high; attached to substratum by slender jointed hair-like roots which are emitted from nodes of the lower decumbent portion of frond. Filaments usually 177–192 μ thick, of almost equal thickness throughout and almost regularly dichotomous. Branches erect, furnished with proliferous branchlets springing from sides or forks; when they proliferate from forks, the ramification seems as if tri-polychotomous. Ends of branches are somewhat club-shaped and sometimes straight but usually forked with inrolled and slightly swollen apices. The cortex surrounding the upper node of every articulation forms a circular ridge or rim, a little prominent obliquely outward and upward, so as to make a shallow cup or sheath which seems as if to receive the base of the articulation next above. Along this rim, a whirl of mostly two-

jointed, colorless, pointed spines are more or less present. Hair-like roots are emitted from nodes of lower decumbent portion of frond in a transverse row beneath the line of spines. Lower articulations 3–6 times as long as, the upper ones gradually shorter than, the diameter, thoroughly corticated with a layer of cortical cells which consist of almost rectangular or hexagonal cells arranged in longitudinal rows. *Cystocarps* unknown to me. *Tetrasporangia* are produced in upper branches (often in proliferous branchlets), mostly along the outer side, sometimes in a transverse row. They are produced from the larger cortical cells which form a ring around the periphery of the nodes, bulging out externally. An examination of the figures 5 and 9 will perhaps serve to make this relation more plain. *Colour* light red or pinkish. *Substance* membranaceous and the plant becomes fragile when dried. It adheres imperfectly to paper in drying.

Hab. On rocks between tide marks: Miyako-jima (Warburg, Heydrich), Kiusiu, Tōtōmi, Sagami, Bōshū, Iwaki, Wakasa, Sado.

Hitherto-known: In different warmer seas.

Plate XVII. **Fig. 1:** *Ceramium clavulatum* in natural state and size.—**Fig. 2:** portion of filament, $\frac{8}{1}$.—**Fig. 3:** terminal portion of filament, $\frac{37}{1}$.—**Fig. 4:** cross-section of filament, moderately magnified.—**Fig. 5:** longitudinal section of filament, $\frac{220}{1}$.—**Fig. 6:** portion of filament, showing spines and hair-like roots, $\frac{220}{1}$.—**Fig. 7:** portion of filament bearing tetrasporangia, $\frac{80}{1}$.—**Fig. 8:** ramulus forming tetrasporangia in transverse rows, $\frac{220}{1}$.—**Fig. 9:** portion of a longitudinal section of filament showing the formation of tetrasporangia, $\frac{340}{1}$.

第十七圖版

Ceramium (Roth) Lyngbye.

いぎす屬

いぎす科

性質. 體ハ直立シ, 多ク分枝シ, 上部ノ枝ハ概テ鈎狀ニ屈曲セル叉枝ヲナシ, 且多少密ニ副枝ヲ生ズ. 枝ハ圓柱狀ニシテ, 大ナル細胞ニテ成レル中軸ヲ有シ, 全體若クハ間ヲ離シテ皮層細胞ヲ被ムル; 皮層細胞ハ多少厚ク, 内方ニハ稍大ナル細胞ヨリ成リ, 外方ニハ漸々小ナル細胞ヲ以テ成ル: 各節間ノ細胞ハ其上方ノ節部ヨリ短條ヲ輪生ス; 此短條ハ短ク且ツ密ニ束集シ, 屢々分枝シ, 根絲細胞ヲ生ズ; 而シテ其分枝シタルモノ及ビ之ヨリ生ジタル根絲細胞相密着シテ中軸ノ周圍ニ環狀皮層ヲナス; 此皮層ハ時ニ只中軸ノ節部ノミヲ圍繞スルコトアリ, 時ニ中軸ノ大ナル細胞ニ沿フテ下方ニ延ビ, 次ノ節ニ同様ニ生ジタル環狀皮層ノ所ニ達スルマデ延ルコトアリ, 又時ニ此等ノ皮層彼是相聯續シテ全體ヲ蔽フ所ノ皮層トナルコトアリ. 皮層ノ外面ハ附屬物ナクシテ裸出シ, 或ハ軟カキ又ハ太キ刺狀ノ毛ヲ有ス. **四分孢子嚢**ハ三角錐樣ニ分裂シ, 體ノ表面ニ散在シ, 中軸ノ節ノ周圍ニアル環狀皮層ノ上部ノ狹キ部分ニ生ジ, 多少體ノ外面ニ膨出ス. **精子器**ハ輪廓不規則ナル廣ガリヲナシテ, 體ノ皮層ノ表面ニ散在ス; 精子細胞ハ精子器層ノ表面ヲ形成セル無數ノ小サキ細胞ニ生ズ. **胎原**ハ上部ノ叉枝ニ生ジ, 枝ノ外側ニ少數ニ散在ス; 則チ皮層ヲ形成スル輪生短條ノ短縮シタル枝ノ基部ノ細胞ニ

六四

胎原列ヲ生ズ; 其一細胞ハ大キクナリテ其一方ノ側若クハ兩側ニ是ヲ生ズ; 胎原列ハ四個(乃至三個)ノ細胞列ヨリ成リ, 屈曲シ, 彼ノ基部ノ細胞ハ助細胞トナル. 囊果ハ體ノ上部ノ枝ノ外側ニ生ジ, 又ハ殆ド枝端ニ形成セラレ, 多少數多ノ鈎狀ニ屈曲セル苞枝ニ存シ, 且多少皮層外ニ露出ス. 成胞絲ハ數個ノ成胞裂絲ニ分レ; 裂絲ノ關節ハ順次ニ胞子トナリテ後圓塊ヲナシ, 各塊無色透明ノ粘膜ヲ被ムル. 一多數ノ種類ニ於テ, 四分胞子囊ヲ有スル體ニバラスボールヲ生ズルコトアリ; バラスボールハ不規則ニ圓ク團集セル若クハ分裂セル胞子塊ヲナシテ, 環狀皮層ノ外面ニ坐ス, 時ニ其數ノ甚ダ多數ナルコトアリ.

四十種以上ノ種類ヲ包含スル屬ニシテ各所ノ海ニ産ス.

Ceramium clavulatum Ag.

とげいぎす (岡村命)

Ceramium clavulatum Ag. Hauck's Meeresalg. p. 113; Bornet Les Alg. d. Schousboe p. 335; De Toni Phyc. Jap. Nov. p. 36.—*Centroccras clavulatum* Mont. J. Ag. Sp. Alg., Vol. II, p. 148; Id. Epicr., p. 108; Harv. Ner. Bor. Amer., tab. 33 C; Kuetz. Phyc. Gener., tab. 46, fig. V.—*Centroccras cryptacanthum* Kuetz. Sp. Alg., p. 688; Id. Tab. Phyc., Vol. XIII, tab. 17.—*Centroccras inerme* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c.—*Centroccras micracanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c., tab. 18.—*Centroccras leptacanthum* Kuetz. Sp. Alg., p. 689; Id. Tab. Phyc., l.c.—*Centroccras macracanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc.,

l.c., tab. 19.—*Centroceras hyalacanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c.—*Centroceras oxyacanthum* Kuetz. Sp. Alg., l.c.; Id. Tab. Phyc., l.c., tab. 20.—*Centroceras brachiacanthum* Kuetz. Tab. Phyc., l.c., p. 8., tab. 20.

體ハ叢生シ、往々半球狀ノ束ヲナス；絲狀ニシテ高サ 2-5 cm. アリ、體ノ下部ノ傾臥セル部分ノ節々ヨリ細キ毛狀根（關節シタル）ヲ出シテ他物ニ付着ス。絲ハ通常 177-192 μ 太ク、各部畧ボ同一ノ太サヲ有シ、殆ド正シク叉狀ヲナス。枝ハ直立シ、側面ヨリ又ハ叉腋ヨリ枝ヲ副出ス；副枝ガ若シ叉腋ヨリ生ズルトキハ三一多叉狀ヲナス；枝ノ頂端ハ稍棍棒狀ニシテ、時トシテハ直立スト雖モ、通常内方ニ鈎狀ニ屈曲シ、且少シク膨レタル頂端ヲ以テ分叉ス。節間部ノ上部ノ縁即チ節部ハ少シク外部ニ隆起シテ宛モ淺キコップ狀ヲナシ、又ハ鞘狀ヲナシ、次ノ上ノ節間ノ基部ヲ之ニ受クルモノ、如ク成レリ。此縁ニ沿フテ尖リタル刺ヲ多少輪生ス；刺ハ概チ二關節ヨリ成リ、無色ナリ。毛狀根ハ體ノ下部ナル傾臥セル部分ノ節ヨリ刺ノ列ノ下ニ横列シテ出ヅ。下部ノ節間ハ其徑ノ長サノ 3-6 倍、上部ノモノハ漸次徑ヨリハ短クシテ、全體一層ノ皮層ヲ被ムル；皮層ハ殆ド正方形又ハ六角形ノ小細胞ノ縦ニ列シタルモノヨリ成ル。囊果ハ余未ダ之ヲ見ズ。四分孢子囊ハ上部ノ枝ニ生ジ（往々副出シタル小枝ニ）、其外側ニ成リ、時トシテハ横列ヲナシテ生ズ；其之ヲ生ズル細胞ハ節ノ周圍ヲ圍ミテ環狀ニ列セル稍大ナル皮層細胞ニシテ、之ヨリ生ジタル四分孢子囊ハ體ノ外面ニ露出ス。第五圖及ビ第九圖ハ節部ノ造構及ビ四分孢子囊ノ生ズル細胞ヲ示ス。色ハ淡紅色或ハ

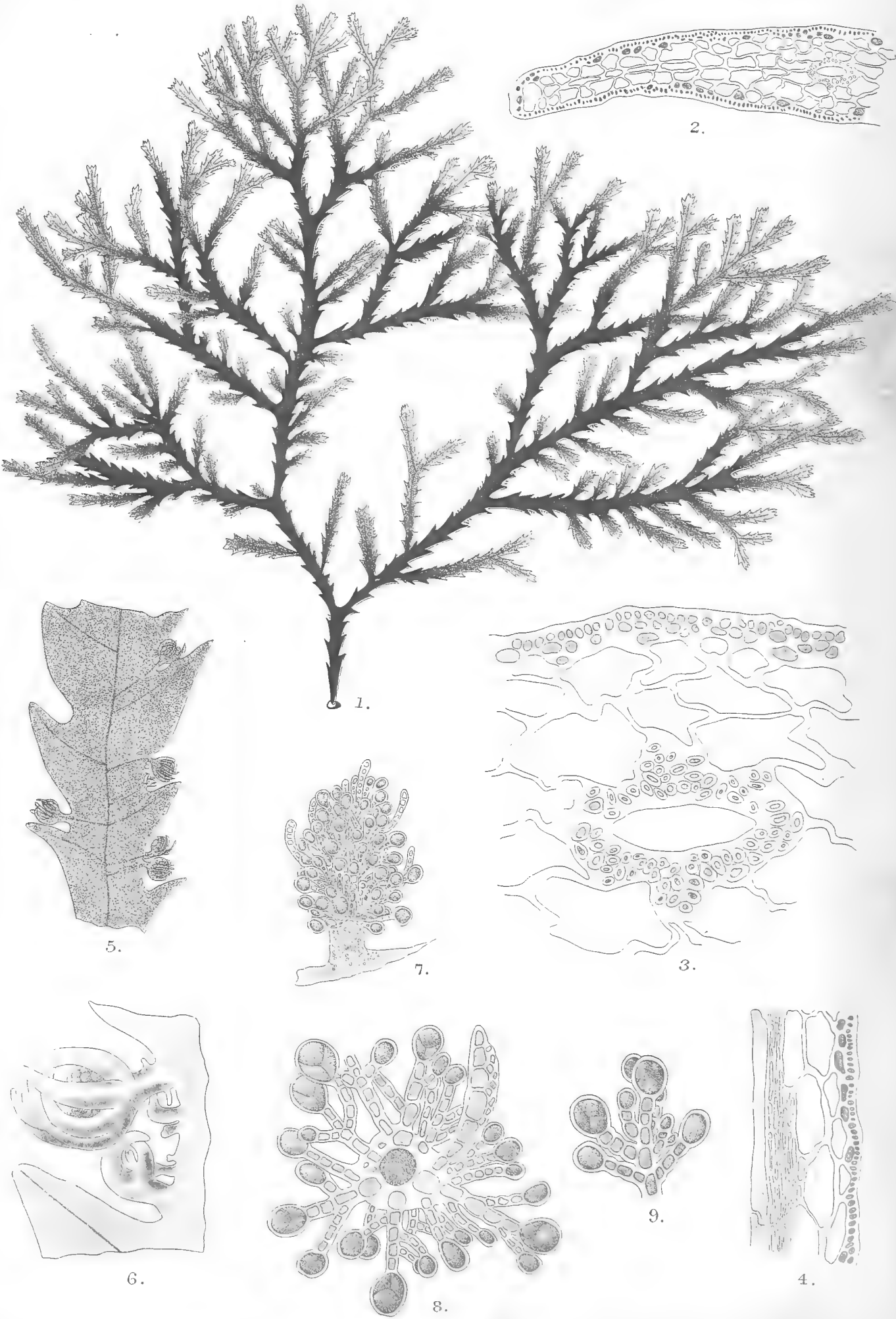
六六

石竹色ナリ。質ハ膜質ニシテ乾燥スルトキハ脆シ;紙ニ付着スルコト充分ナラズ。

產地。潮線間ノ岩石ニ生ズ。臺灣及宮古島(Warburg, Heyd-rich), 九州, 遠江, 相模, 房州, 磐城, 若狹, 佐渡。

既知產地。所々暖海ニ産ス。

第十七圖版。第一圖: とげいぎすノ自然ノ状態, $\frac{1}{1}$ 。第二圖: 體ノ一部, $\frac{8}{1}$ 。第三圖: 體ノ頂部, $\frac{37}{1}$ 。第四圖: 體ノ横斷面, 廓大。第五圖: 體ノ縦斷面, $\frac{220}{1}$ 。第六圖: 體ノ一部ニシテ刺ト毛狀根トヲ示ス, $\frac{220}{1}$ 。第七圖: 四分胞子囊ヲ有スル體ノ一部, $\frac{80}{1}$ 。第八圖: 横列ヲナセル四分胞子囊ヲ有スル小枝 $\frac{220}{1}$ 。第九圖: 體ノ縦斷面ノ一部ニシテ, 四分胞子囊ノ生ズル部分ヲ示ス, $\frac{340}{1}$ 。



K. Okamura. del.

Ptilota dentata Okam.

PLATE XVIII.

Ptilota dentata Okam.

CERAMIACEÆ.

Nom. Jap.: *Beni-hiba*.

Ptilota dentata Okam. Sp. Nov. in Bot. Mag. Tokyo, Vol. VI., no. 62, 1892, p. 149-150, Pl. IV; G. B. de Toni Phyc. Jap. Nov., p. 34; Okam. Alg. Jap. Exsic., Fasc. I, no. 26.

Diagn.: *Fronde* compressed, two-edged, midribbed, decomposito-pinnate; branches distichous, alternate, patent, and also proliferous from the axils of pinnæ; pinnæ of simple character regularly alternate, deltoido-acuminate, entire; those of compound, suppressed in sterile frond, presenting only in fertile frond as a very short fertile pinnæ. Fruits of both kinds developed from pinnæ of compound character, which are shortened and produced single or seriated along the margin of branches above the axils of simple pinnæ. *Cystocarps* shortly pedicelled, involucrate. *Tetrasporangia* collected in a dense globular aggregation on apices of the short pinnæ, produced from the terminal cells of pinnulæ and of opposite pinnellæ, which are mixed with sterile—simple or pinnated and subclavate—pinnulæ. Antheridia unknown to me.

Hab. On rocks, stones, shells, calcareous algæ etc. near low tide. Rather common along our warmer Pacific coast: Iwaki, Hitachi, Kadzusa, Bōshū, Tōtōmi. *Cystocarps* and *tetrasporangia*—August.

Description: The *root* is a small disc. The *frond* is caespitose, ancipito-compressed, 5-25 cm. high, 2-3 mm. broad,

and has a more or less distinct, immersed, slightly flexuous midrib which becomes fainter gradually upwards. The ramification is irregularly decompound-pinnate, with patent branches the axils of which are rounded. The proliferous branchlets, which are always narrowed at the base, issue from or above the axils of pinnæ. The simple pinnæ are broad at the base, pointed at the apex, with entire margin, and about 1 mm. long. They are incurved when young, but erecto-patent or somewhat recurved when old. They have an excentric monosiphonous axis and are corticated to the apex. *Fruits* of both kinds are developed from pinnæ of compound character, which are stunted and cylindrical. They are formed either singly or otherwise, seriated along both sides of branches above the axils of deltoid pinnæ. The masses of *tetrasporangia* are roundish or oblong, densely aggregated on the apex of short pedicels, that is pinnæ of the compound character. They are developed from the terminal cells of monosiphonous pinnulæ and pinnellæ. And these are accompanied by sterile pinnulæ which are either simple and confervoid or pinnate and subclavate. *Cystocarps* are formed on a short cylindrical pedicel, involucreted with 7-8 thickly corticated ramuli which are simple, cylindrical and entire, tapering towards the apex. Gonimoblast parted into two or three roundish gonimolobes surrounded by a colorless membrane. Antheridia unknown to me. The *colour* of frond is deep-red, turning to dark-red in drying. The *substance* is cartilaginous and the plant adheres imperfectly to paper in drying, except the younger portion.

The present plant may be considered as a *Ptilota* having opposite dissimilar pinnæ, of which compound, that is pinnated, ones have been suppressed in sterile frond, the latter being represented only in fertile form, and as the consequence, pinnæ

of simple character stand alternately. The compound nature of fertile pinnæ is well shown in tetrasporic pinnæ, as the tetrasporangia are produced from the terminal cells of pinnulæ and opposite pinnellæ. With respect to the affinity of the present plant we may consider that it exists with *Ptilota Asplenoides*, as it is shown by similar arrangement of fructified pinnæ, by the alternate disposition of the simple ones, and by the obsolescence of those of compound nature in both plants in consideration. Of the difference between *Ptilota dentata* and *Pt. Asplenoides* it is so manifest that we need no further description. Among those *Ptilotae* which have regularly alternate and similarly constructed pinnæ, such as *Ptilota formosissima*, *Pt. siliculosa* and others (i.e. species of *Euptilota* Kuetz), we are far from finding any plant allied to the present *Ptilota*. In those just mentioned the arrangement of tetrasporangia and tetrasporic pinnæ are so widely different from that of those of *Ptilota dentata* that no one can judge the present plant has any affinity with them. *Ptilota Asplenoides* has a wide range of distribution in the Arctic Ocean and in the Pacific, along the coasts of America, Kamschatka and Kurile Island, and it reaches down to Kushiro, a province in the south-eastern coast of the Hokkaido. *Ptilota dentata* is found in the warmer and southern coast of the Pacific, as far as it is known, extending from Iwaki to Tōtōmi. In my opinion, it has certainly a close relation to *Ptilota Asplenoides* having been naturalized and established as a southern representative. This plant is, as it is hitherto-known, only *Ptilota* which is found in the warmer part of our Pacific coast.

Plate XVIII. **Fig. 1:** Frond of *Ptilota dentata* bearing tetrasporangia in natural state and size.—**Fig. 2:** portion of a

cross-section of frond, $\frac{5}{1}^2$.—**Fig. 3**: portion of the same, more highly magd., $\frac{2}{1}^2$.—**Fig. 4**: portion of a vertical section of frond, cutting through the midrib, $\frac{1}{1}^3$.—**Fig. 5**: portion of frond bearing cystocarps, showing the midrib and veins, $\frac{8}{1}$.—**Fig. 6**: cystocarps, $\frac{5}{1}^2$.—**Fig. 7**: tetrasporic pinnæ, $\frac{9}{1}^1$.—**Fig. 8**: cross-section of the same, $\frac{2}{1}^2$.—**Fig. 9**: tetrasporic pinnula detached, $\frac{2}{1}^2$.

第十八圖版

Ptilota C. Ag.

べにひば屬

いぎす科

性質、體ハ直立シ、屢々密ニ分枝シテ、枝ハ一ノ平面ヲナス; 扁平ニシテ兩縁ニ薄ク、多少厚ク皮層ヲ以テ蔽ハル; 皮層ハ數層ノ大小ノ細胞ヨリ成リ、一條ノ中軸ヲ有シ、中軸ノ周圍ニ往々數條ノ細長キ絲狀細胞ヲ有ス。無限枝ハ有限枝ヲ羽狀ニ分枝シ、此枝ハ互生ス; 而シテ有限枝ハ全縁又ハ鋸齒狀分裂ヲナシ、若クハ種々羽狀様ニ分裂ス; 且無限枝ト對生シテ有限枝ヲ生ズ(無限枝ハ或ハ後ニ伸長スルコトアリ、又往々短縮シテ伸ザルコトアリ、或ハ短縮シタル成實枝トナルコトアリ)。有限枝ハ時トシテハ後ニ無限枝トナリテ伸長スルコトアリ。無限枝ノ成長點細胞ハ横ニ關節ス。四分孢子囊ハ多數密集シテ團塊ヲナシ、甚シク短縮シタル枝ノ頂部若クハ全面ヲ蔽フ; 此孢子托ハ特殊ノ短縮シタル成實枝(羽枝ト對生セル)ニ通常多數ニ形成セラレ、又ハ有限羽枝ノ上側ノ鋸齒(稀ニ下側ノモノニモ生ズ)ニ一塊ヅ、生ズ; 各四分孢子囊ハ三角錐様分裂ヲナシ、短柄ヲ有シ、離生シ、時ニ中性ノ絲狀ノ枝ト混在スルコトアリ。胎原ハ四分孢子托ト同様ノ位置ニ生ジ、羽枝ノ鋸齒又ハ羽枝ノ小羽枝ニ於テ先端ニ近ク生ズ。囊果ハ特殊ノ成實枝ニ生ジ(此枝ハ羽枝ト對生ス)、又有限枝ノ上側ノ鋸齒ノ先端ニ生ジ、數條ノ後生的苞枝ヲ以テ圍マル。仁ハ不規則ニ團集セル二三塊ノ孢子塊ヨリ成リ、各無色ノ粘膜ヲ以テ蔽ハル。

此屬ハ之迄數多ノ種類ヲ藏シタリシガ今ハ *Phumaria* (Stackh.) Schmitz., *Euptilota* Kützing 及ビ本屬ノ三ニ分レタリ, 而シテ本屬ハ6-10種ヲ含ミ, 何レモ太西洋及ビ太平洋ノ北部ニ産ス. 本邦ニハ此屬ノモノ三種アリ.

Ptilota dentata Okam.

べにひば (岡村 命)

Ptilota dentata Okam. Sp. Nov. in Bot. Mag. Tokyo, Vol. VI, no. 62, 1892, p. 149-150, Pl. IV; G. B. de Toni Phyc. Jap. Nov., p. 34; Okam. Alg. Jap. Exsic., Fasc. I, no. 26.

性質. 體ハ扁壓ニシテ, 兩縁ニ薄ク, 中肋ヲ存シ, 複羽狀ニ分枝ス; 枝ハ兩縁ヨリ出デ, 互生, 廣開シ, 羽枝ノ腋ヨリモ亦副枝ヲ發出ス. 單性ノ羽枝(即チ有限枝)ハ規則正シク互生シ, 三角形ニシテ上端尖リ, 全縁ナリ. 複性ノ羽枝(即チ無限枝)ハ實ナキ體ニハ缺損シ, 只實アル體ニノミ, 甚ダ短キ成實枝トシテ現ル. 兩種ノ果實ハ複性ノ羽枝ニ生ジ, 此羽枝ハ短縮シテ, 單性羽枝ノ腋ヨリ單個, 或ハ其腋ノ上方ニ於テ枝ノ兩縁ニ沿フテ並列ス. 囊果ハ短柄ヲ有シ, 苞枝ヲ存ス. 四分胞子囊ハ短キ羽枝ノ頂部ニ密ナル團塊ヲナシテ集リ, 此胞子托ヲ形成スル所ノ小羽枝及ビ其對生セル枝ノ頂端ノ細胞各四分胞子囊ヲナス; 而シテ中性ノ一單條ナル若クハ羽狀ニ分枝シテ棍棒狀ヲナセル—小羽枝ト混在ス. 精子器ハ余之ヲ知ラズ.

產地. 低潮線附近ノ岩石, 貝殻, 石灰藻類等ノ上ニ生ズ.

本邦太平洋沿岸ノ暖部ニ稍普通ナリ。磐城,常陸,上總,房州,遠江。囊果及ビ四分孢子一八月。

付着器ハ小吸盤狀ナリ。體ハ叢生シ,兩縁ニ薄ク,扁壓シ,5-25 cm. 高ク,巾2-3 mm. アリ,而シテ多少明カナル中肋ヲ存ス;中肋ハ體內ニ埋在シ,少シク屈折シ,漸々上方ニ不明トナル。枝ハ不規則ニ複羽狀ヲナシ,廣開シ,腋圓シ;副出シタル枝ハ其基部常ニ細ク,羽枝ノ腋ヨリ若クハ腋ノ上方ヨリ出ヅ。單性ノ羽枝ハ三角形ニシテ,基部廣ク,上端尖リ,全縁ニシテ,凡ソ1 mm. 長シ;初メ上方ニ屈曲シ,後廣開シ,老成スルトキハ稍下方ニ反ル;其造構ハ少シク中心ヲ外レタル單管軸ヲ有シ,頂端マデ皮層細胞ヲ被ムル。兩種ノ果實ハ複性ノ羽枝ニ生ジ,此羽枝ハ短クシテ圓柱狀ナリ;而シテ單獨ニ生ジ,或ハ三角狀羽枝ノ腋ノ上方ノ枝ノ兩側ニ並列ス。四分孢子囊ノ塊ハ圓ク又ハ長橢圓形ニシテ,短柄即チ複性ノ羽枝ノ頂部ニ密集ス。各孢子囊ハ單縱列ノ細胞ヨリ成レル小羽枝及ビ其枝ノ頂端ノ細胞ヨリ生ズ;而シテ無性ノ羽枝アリテ之等ノ羽枝ト混在ス;其無性ノ羽枝ハ單條ニシテコンフルバノ如ク又ハ羽狀ニ分枝シテ稍棍棒狀ヲナス。囊果ハ短キ圓柱狀ノ柄ノ上ニ生ジ,7-8 條ノ苞枝ヲ以テ圍マル;苞枝ハ單條,圓柱狀ニシテ全縁,頂端細ク,厚ク皮層ヲ被ムル。成胞絲ハ二三ノ圓キ成胞裂絲ニ分レ,各塊無色ノ粘膜ヲ有ス。精子器ハ余之ヲ詳ニセズ。色ハ濃紅色ニシテ,乾燥スルトキハ暗紅色ニ變ズ。體質ハ軟骨質ニシテ,乾燥スルトキハ幼キ部分ノ外ハ臺紙ニ附着スルコト充分ナラズ。

本植物ハ同一ナラザル對生ノ羽枝ヲ有スルベにひばノ

一トシテ考フルコトヲ得ベシ;其同ジカラザル對生ノ羽枝ニ就テ、複性ノモノ即チ羽狀ニ分枝スル無限枝ハ實ナキ體ニハ缺損シテ發育セズ、只實アル體ニノミ現ル;此故ニ單性ノ羽枝(即チ有限枝)ハ互生シテ出ヅ。實ヲ生ジタル羽枝ノ複性ナルコトハ、其四分孢子囊ヲ着クル者ニ於テ能ク明カナルヲ得ベシ;何トナレバ四分孢子囊ハ其羽枝ヨリ分枝セル小羽枝及ビ此小羽枝ノ枝ノ頂端ノ細胞ヨリ生ズレバナリ。本植物ノ類縁ニ關シテハ吾人ハ是ヲ以テかたはべにひば (*Ptilota Asplenoides*)ト密ナル關係ヲ有スルモノト考フルコトヲ得ベシ;其證左トスベキ點ハ、此兩種ノ植物ニ於テ、實ヲ生ジタル羽枝ノ配列ノ同一ナルコト、單性羽枝ノ互生配置ヲ有スルコト、並ニ複性羽枝ノ不明ナルコト、ニアリトス。而シテ此兩種ノ差異ニ就テハ別ニ多言ヲ要セザルベシ。次ニ、同様ニ構成セラレ且ツ正シク互生スル羽枝ヲ有スル類、則チ *Ptilota formosissima*, *Pt. siliculosa* 等(此等ノ種類ハ別ニ *Euptilota* 屬ヲ組成ス;此類ハ本邦ニハ産セズ)ノ内ニハ本植物ニ近縁ヲ有スル類ヲ見出スコト能ハズ;此等ノ類ニアリテハ四分孢子囊及ビ之ヲ有スル羽枝ノ配列ノ狀ハ本植物ニ於ケルモノト甚シク異ナリテ、何人ト雖モ此等ノ内ニ本植物ト類縁ヲ有スルモノアリト判ズル能ハザル如ク然リ。かたはべにひばハ北氷洋及ビ北部太平洋ニ於テ廣ク分布スルモノニシテ、アメリカノ沿岸ヨリ、カムサツカ及ビ千島諸島ニ亘リ北海道ノ釧路迄モ南下ス。べにひばハ我太平洋ノ南部ニシテ溫暖ナル部分ノ沿岸ニ産シ、從來知レル所ニテハ、磐城ヨリ遠江ニ至ル。是ニ依テ余ノ考フルニハ、本植物ハ明ニかたはべにひばト密

接ナル類縁ヲ有スルモノニシテ、此種ヨリ變ジテ南方ノ代表者トナリ、玆ニ一種トシテ成立スルニ至リタルモノナルベシ。本植物ハ從來ノ智識ニ依ルニ、我太平洋沿岸ノ温暖部ニ産スル唯一ノベにひば類ナリトス。

第十八圖版 第一圖：四分孢子囊ヲ有スルベにひばノ自然ノ狀態, $\frac{1}{1}$.—第二圖：體ノ横斷面ノ一部, $\frac{5^2}{1}$.—第三圖：同上ノ一部ヲ更ニ廓大シタルモノ, $\frac{2^20}{1}$.—第四圖：中肋ヲ通ジテ截リタル體ノ縦斷面ノ一部, $\frac{1^30}{1}$.—第五圖：囊果ヲ有スル體ノ一部ニシテ中肋及ビ側脉ヲ示ス, $\frac{8}{1}$.—第六圖：囊果, $\frac{5^2}{1}$.—第七圖：四分孢子囊ヲ有スル羽枝, $\frac{9^1}{1}$.—第八圖：同上ノ横斷面, $\frac{2^20}{1}$.—第九圖：四分孢子囊ヲ有スル小羽枝ヲ離シテ示ス, $\frac{2^20}{1}$.



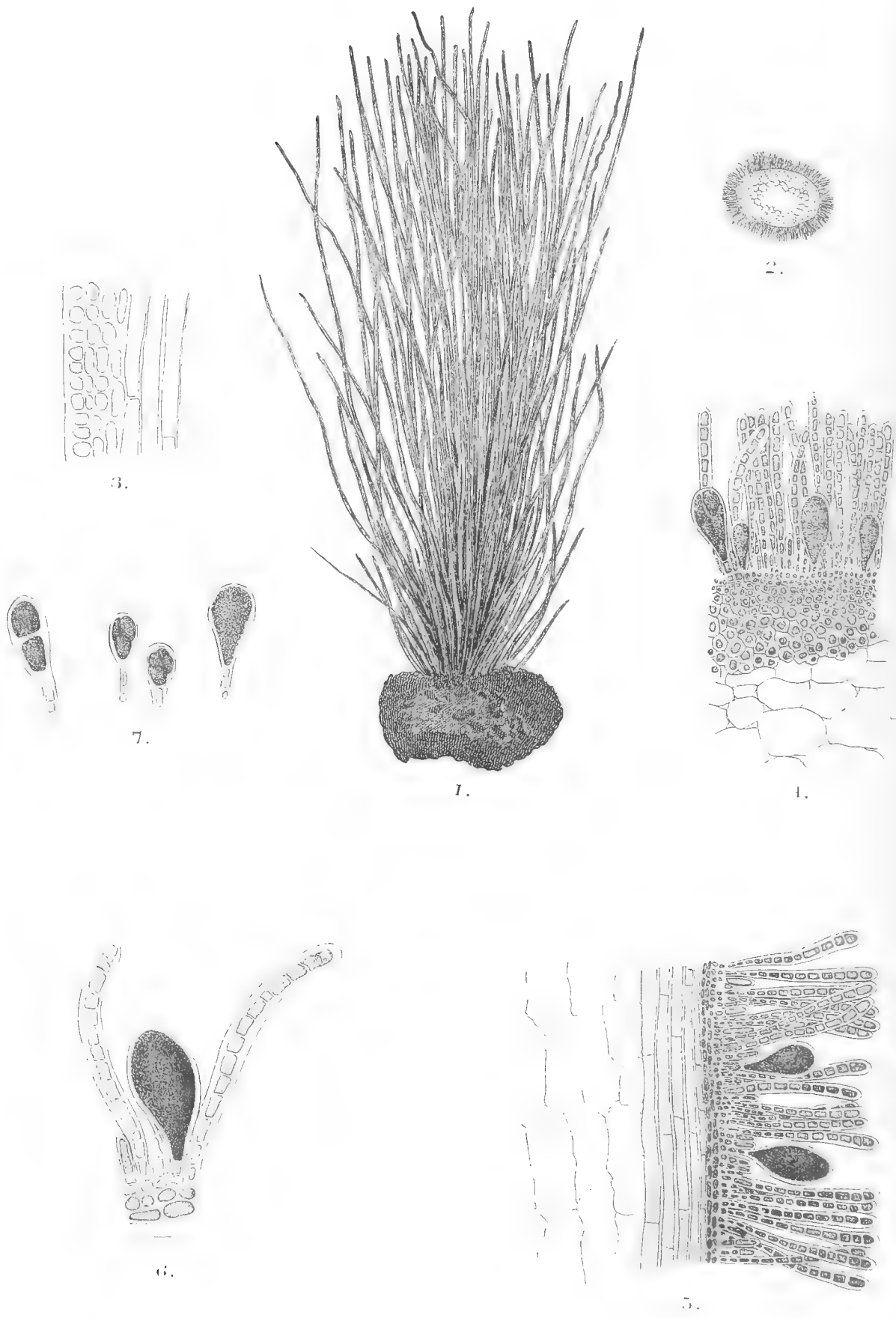


PLATE XIX.

Myelophycus caespitosus (Harv.) Kjellm.

ENCŒLIACEÆ.

Nom. Jap.: *Iwa-hige*.

Myelophycus caespitosus Kjellm. in Engl. et Prantl's Natürl. Pflanzenfam. I Teil, 2, p. 202, fig. 141; De Toni Phyc. Jap. Nov. (1895), p. 55; Id. Syll. Alg., Vol. III, p. 484.—Okam. Alg. Jap. Exsic., Fasc. I, no. 44.—*Chordaria simplex* Harv. in Gray's List of Jap. Plant, (1856), Algæ, p. 331, no. 3.

Fronds densely tufted, gregarious, arising from a common scutate disc, simple and straight, 5–15 cm. high, 1 mm. thick, filiform, often spirally twisted, gradually attenuating below into a short stem, and ending in a somewhat blunt apex; solid when young, but becoming hollow in age. *Substance* cartilaginous and the plant does not adhere to paper in drying. *Colour* dark brown, turning to blackish when dried.

Hab. Gregarious on rocks at high tide. Amakusa-jima, Nagasaki, Nagato, Tosa, Suruga, Idzu, Sagami, Bōshū, Iwaki, Rikuzen.

Plate XIX. **Fig. 1:** *Myelophycus caespitosus* in natural state and size.—**Fig. 2:** cross-section of the fertile frond, $\frac{30}{1}$.—**Fig. 3:** portion of a longitudinal section of the sterile frond, $\frac{390}{1}$.—**Fig. 4:** portion of a cross-section of fertile frond showing assimilatory filaments and sporangia, $\frac{220}{1}$.—**Fig. 5:** portion of a longitudinal section of fertile frond, $\frac{220}{1}$.—**Fig. 6:** assimilatory filaments and a sporangium, $\frac{390}{1}$.—**Fig. 7:** sporangia, $\frac{220}{1}$.

第十九圖版

Myelophycus Kjellm.

いわひげ屬

ふくろのり科

性質. 體ハ細キ圓柱狀ニシテ, 始メ實質, 後中空トナリ, 下部細クナリテ短莖ヲナス. 付着器ハ圓盤狀ナリ. 體ハ三層ヨリ成ル: 内層ハ薄膜ヲ有スル畧ボ正方形様ノ大ナル細胞ヨリ成リ; 中層ハ厚キ膜ヲ有スル細長キ縦ノ細胞ヨリ成リ; 外層ハ僅層ノ小サキ圓ミアル細胞ヨリ成リ, 多少體ノ表面ニ直角ニ縦列ス. 實アル體ノ外層ハ互ニ離レタル, 單縦列ノ細胞ヨリ成レル類化絲ヨリ成リ, 此絲ハ體ノ皮層細胞ノ特ニ伸長シタルモノナリ. 單子囊ハ皮層細胞ヨリ變成シ, 多少長キ關節シタル柄ヲ有シ, 倒卵圓形ナリ. パラフ_キシスハ缺損ス. ガメート囊ハ未詳.

一屬一種ニシテ本邦沿岸ニノミ産ス.

Myelophycus caespitosus (Harv.) Kjellm.

いわひげ (岡村命)

Myelophycus caespitosus Kjellm. in Engl. et Prantl's Natürl. Pflanzenfam. I Teil 2, p. 202, fig. 141; De Toni Phyc. Jap. Nov., (1895), p. 55; Id. Syll. Alg., Vol. III, p. 484.—Okam. Alg. Jap. Exsic., Fasc. I, no. 44.—*Chordaria simplex* Harv. in Gray's List of Jap. Plant, (1856), Algæ, p. 331, no. 3.

七四

體ハ密ニ叢生シ,簇生シ,共通ノ圓盤狀付着器ヲ以テ直立ス;單條ニシテ,眞直, 5-15 cm. 高ク, 1 mm. 太ク,絲狀ニシテ,往往螺旋狀ニ捻レ,下部漸次細クナリテ短莖ヲナシ,稍鈍頭ニ終ル. 幼キ時ハ實質ナレドモ,後中空トナル. 體質ハ軟骨質ニシテ乾燥スルトキハ紙ニ付着セズ. 色,暗褐色,乾燥スルトキハ畧ボ黑色トナル.

產地. 高潮線ノ岩石ニ簇生ス. 天草島, 長崎, 長門, 土佐, 駿河, 伊豆, 相模, 房州, 磐城, 陸前.

第十九圖版. 第一圖: いわひげノ自然ノ狀態, $\frac{1}{1}$.—第二圖: 實アル體ノ横斷面, $\frac{30}{1}$.—第三圖: 實ナキ體ノ縦斷面ノ一部, $\frac{300}{1}$.—第四圖: 實アル體ノ横斷面ノ一部ニシテ類化絲ト子囊トヲ示ス, $\frac{220}{1}$.—第五圖: 實アル體ノ縦斷面ノ一部, $\frac{220}{1}$.—第六圖: 類化絲及ビ子囊, $\frac{300}{1}$.—第七圖: 子囊, $\frac{220}{1}$.

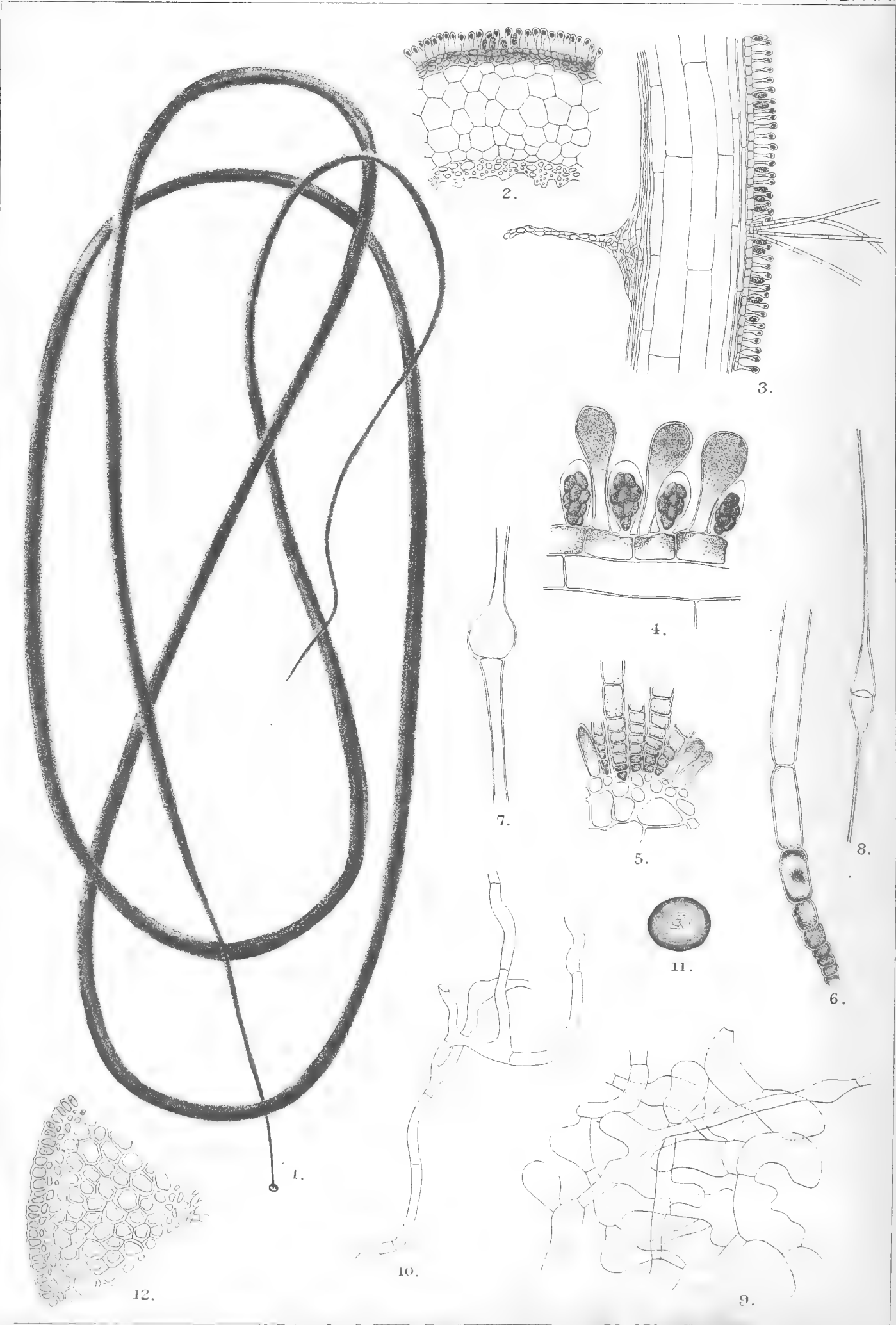


PLATE XX.

Chorda Filum (L.) Lamour.

LAMINARIACEÆ.

Nom. Jap.: *Tsuru-mo*.

Chorda Filum Lamour. Essai p. 26; Kjellm. in Engler u. Prantl's Natur. Pflanzenfam., I Teil 2, p. 254, fig. 171; Harv. Phyc. Brit., tab. CVII; Farlow Mar. Alg. of New Engl., p. 91, Pl. VI, fig. 1; De Toni Syll. Alg., Vol. III, p. 318; Hauck Meeresalg., p. 394, fig. 172; Kuetz. Sp. Alg., p. 548 (*a. genuina*); Kuetz. Tab. Phyc., Vol. VIII, tab. 14 a.—*Scytosiphon Filum* J. Ag. Sp. Alg., Vol. I, p. 126.—*Fucus Filum* L. in Turn. Fuci, tab. 86.

Root a small circular disc. *Fronde*s single or tufted, simple, chord-like, sometimes twisted in age, 3–4 mm. in length and 3–5 mm. or more in diameter in the middle, very much attenuated to a filiform stem at the base, and gradually tapering to a rather acute point at the apex, everywhere covered, when young, with scattered, pellucid or light-yellowish, gelatinous hairs; when old, these mostly disappear, the frond becoming more harsh and less lubricous and traversed by an internal tube which is divided at different intervals by diaphragms, not indicated by any external constriction or swelling. Frond consist of three layers: the innermost, of longitudinally running slender thread-like cells which form so-called sieve-tube in the vicinity of diaphragm; the intermediate, of long, cylindrical or polyhedral cells becoming more slender outward, being covered by a few layers of epidermal cells i.e. the outermost layer. *Paraphyses* clavate with slender neck, protruding above unilocular sporangia which are minute and oval or elliptico-oblong. Size of sporangia $27\ \mu$ by $9\text{--}10\ \mu$;

that of paraphyses 35–38 μ long. *Substance* cartilaginous and the plant closely adheres to paper by means of the lubricous hairs, less so when it becomes old and the hairs are abraded. *Colour* reddish brown, fading to yellowish or greenish brown when dried.

Hab. Gregarious on rocks, stones and shells at low water mark and below, preferring tranquil places. Nagasaki, Chikuzen, Tosa, Kōbe, Ise, Shinagawa (near Tokyo), Hakodate, Noto, Sado. Sporangia: May—June.

Hitherto-known: In the Atlantic along the shores of Europe and North America; in the Arctic Ocean; in Baltic sea.

Plate XX. **Fig. 1:** *Chorda Filum* in natural size.—**Fig. 2:** portion of a cross-section of the fructified frond, $\frac{52}{1}$.—**Fig. 3:** portion of a longitudinal section of the fructified frond showing diaphragm, paraphyses and hairs, $\frac{52}{1}$.—**Fig. 4:** paraphyses and sporangia formed from epidermal cells, $\frac{600}{1}$.—**Fig. 5:** basal portion of hairs and paraphyses, $\frac{220}{1}$.—**Fig. 6:** hair, $\frac{220}{1}$.—**Fig. 7 and 8:** sieve-tube, $\frac{390}{1}$.—**Fig. 9:** portion of diaphragm seen from surface, $\frac{390}{1}$.—**Fig. 10:** filament composing diaphragm, detached, $\frac{220}{1}$.—**Fig. 11:** cross-section of the stem, $\frac{10}{1}$.—**Fig. 12:** portion of the same, $\frac{91}{1}$.

第二十圖版

Chorda Stackh.

つるも屬

こんぶ科

性質. 體ハ紐狀ニシテ, 往々 3-4 m. 長ク, 下部實質, 上部中空ニシテ所々横隔膜ヲ以テ數室ニ分レ, 無色若クハ黃色ノ毛ヲ以テ蔽ハレ, 全縁ナル盤狀附着器ヲ以テ固着ス. 造構ハ三層ヨリ成ル; 内層ハ縱走セル絲狀細胞ヨリ成リ, 此細胞ハ所ニ篩狀板ヲ有シテ篩管ヲナス, 殊ニ隔膜附近ニ多シ; 中層ハ太キ圓柱狀又ハ多角形ノ長キ縱ノ細胞ヨリ成リ, 外部ニ近クニ從テ漸ク細シ; 外層ハ小サキ多角形ノ細胞數層ヨリ成リ以テ皮層ヲナス; 隔膜ハ内層細胞ノ横ニ薄ク錯綜スルモノニシテ, 不規則ニ分岐セル絲狀細胞ヨリ成ル; 粘液腔ハ全ク之ヲ缺ク. 成長點ハ別ニ明ナラズシテ介生成長ヲナス. 單子囊ハ橢圓形ニシテ表皮細胞ヨリ生ジ, パラフ_#シスヲ有ス; 而シテ子囊群ハ體ノ下部ヲ除キテ殆ド全面ニ互ル; パラフ_#シスハ子囊ト同長若クハ之ヨリ長ク, 概テ棍棒狀ニシテ, 上端甚ダ大ナリ; 其細胞膜ハ上部モ柄部モ殆ド同厚ナリ, 而シテ子囊ト同一ノ表皮細胞ヨリ生ズ. 游走子萌發シテ先ヅ前苗體ヲナシ, 後是ヨリ通常ノ體ヲ生ズ.

北氷洋, 北部太西洋及ビ太平洋ニ於テ二三種アリ. 就中つるもハ其最モ廣キ分布ヲ有スルモノナリ.

Chorda Filum (L.) Lamour.

つるも

Chorda Filum Lamour. Essai, p. 26; Kjellm. in Engl. u. Prantl's Natürl. Pflanzenfam., I Teil. 2, p. 254, fig. 171; Harv. Phyc. Brit., tab. CVII; Farlow Mar. Alg. of New Engl., p. 91, Pl. VI, fig. 1; De Toni Syll. Alg., Vol. III, p. 318; Hauck Meeresalg., p. 394, fig. 172; Kuetz. Sp. Alg. p. 548 (*a. genuina*); Id. Tab. Phyc., Vol. VIII, tab. 14 a.—*Scytosiphon Filum* J. Ag. Sp. Alg., Vol. I, p. 126.—*Fucus Filum* L. in Turn. Fuci., tab. 86.

根ハ小サキ圓キ盤狀根ナリ。體ハ單獨又ハ叢生シ、單條ニシテ、紐ノ如ク、時トシテハ老成スルニ至テ捻レ、3-4 m. ノ長サヲ有シ、中央部ノ直徑 3-5 mm. 若クハ以上ニ達ス。基部甚シク細クナリテ絲狀ノ莖ヲナシ、上部ニ漸々細クナリテ殆ド尖銳ニ終ル。幼者ハ全體ニ透明ナル若クハ淡黃色ノ粘リアル毛ヲ生ジ; 老成スルニ至レバ、毛ハ多クハ消滅シ、體ハ爲ニ硬クナリ、僅ニ粘滑ナルニ至ル。體ノ内部ハ中空ニシテ、所所ニ横隔膜ヲ存スルニ依リテ數多ノ小室ニ分タル; 然レドモ體ノ外面ニハクビレタル所若クハ膨レタル所アルコトナシ。體ハ三層ヨリ成ル: 内層ハ縱走セル絲狀細胞ニシテ所謂篩管ヲナシ、殊ニ隔膜附近ニ此組織多シトス; 中層ハ長キ圓柱狀又ハ多角形ノ細胞ヨリ成リテ、縦ニ集リ、外部ニ近クニ從テ細クナリ、一二層ノ小細胞其外部ヲ蔽フモノ即チ皮層ナリ。毛ハ皮層ノ少シク凹ミタル所ヨリ叢生ス。パラフ_#シスハ棍棒狀ニシテ細キ柄ヲ有シ、子囊ノ上ニ挺出ス。子囊ハ小ニシテ、橢圓形又ハ橢圓—長橢圓形ナリ。子囊ハ 27 μ 長ク、9-10 μ

ノ幅ヲ有ス;パラフ_#シスノ長サハ 35-38 μ ナリ。體質ハ軟骨質ニシテ,乾燥スルトキハ粘質アル毛ノ爲ニ紙ニ密着シ,其老成シタルモノハ毛ノ脱落シタル爲ニ附着充分ナラズ。色ハ赭褐色ニシテ死スルニ至レバ黄褐色又ハ緑褐色トナル。

產地。低潮線ニ近キ若クハ其以下ナル岩石,貝殻等ノ上ニ叢生シ,靜穩ナル場所ヲ好ム。長崎,筑前,土佐,神戸,伊勢,武州品川,函館,能登,佐渡。子囊: 五一六月。

既知產地。太西洋即チ歐洲及ビ米國ノ沿岸;北氷洋;バルチック海。

此種ハ一般ニ半深帶ニ産シ, 1-3 尋ノ所ニアリ。多クハ港灣ノ如キ靜ナル所ヲ好ミ,又開キタル沿岸ニモ生ズレドモ其最モ繁盛スル所ハ岩陰ノ如キ波濤ノ靜穩ナル所ニアリトス。

第二十圖版。第一圖: つるも, $\frac{1}{1}$ 。—第二圖: 實アル體ノ横斷面ノ一部, $\frac{5.2}{1}$ 。—第三圖: 實アル體ノ縦斷面ノ一部, 隔膜, パラフ_#シス及ビ毛ヲ示ス, $\frac{5.2}{1}$ 。—第四圖: パラフ_#シス及ビ子囊ノ表皮細胞ヨリ生ズル狀, $\frac{6.0}{1}$ 。—第五圖: 毛ノ基部トパラフ_#シス, $\frac{2.2}{1}$ 。—第六圖: 毛, $\frac{2.2}{1}$ 。—第七圖及八圖: 篩管, $\frac{3.0}{1}$ 。—第九圖: 隔膜ノ一部ヲ表面ヨリ見タルモノ, $\frac{3.0}{1}$ 。—第十圖: 隔膜ヲ組成スル絲ヲ離シテ示ス, $\frac{2.2}{1}$ 。—第十一圖: 莖ノ横斷面, $\frac{1.0}{1}$ 。—第十二圖: 同上ノ一部ヲ廓大シテ示ス, $\frac{9.1}{1}$ 。

學 語 解

無限枝, Unbegrenzter Spross; 枝ノ伸長ニ限リナキヲ云フ, 則チ枝ハ伸長シ, 隨テ分枝スルヲ常トス.

有限枝, Begrenzter Spross; 枝ノ伸長ニ限リアルヲ云フ, 則チ枝ハ伸長セズ, 隨テ分枝スルコトナシ.

成實枝, Frucht Spross, Fertile branch; 生殖細胞ヲ生ズベキ枝ヲ云フ.

後生的, Secundär, Secondary, Adventive; 後ニ生ジタルト云フ義.

中性, Sterile, Neutral; 生殖細胞ヲ生ゼザルノ意.

コンフエルバ様, Confervoid; コンフエルバト稱スル藻類ノ如キノ意ニシテ, コンフエルバトハ小細胞ノ一列ニ連ナレル絲狀ノ綠藻類ナリ. 故ニ細胞ノ一列ニ連ナリテ絲狀ヲナスモノヲ往々コンフエルバ様ト云フ.

根絲細胞, Rhizoid or Berindungsfäden; 根ノ如キ絲狀細胞ト云フ義ニシテ, 通常細長キ一列ノ細胞ヨリ成レルアリ, 又關節セザル絲狀細胞ナルコトアリテ, 皮層ヲ形成スルモノニ用キル. 然レドモ之ヲ形狀ノミニ用キテ, 他ノ部ニアル同様ノモノニモ適用ス.

parasporium, Paraspore or Polyspore; 四分孢子ト同様ナル無性孢子ナレドモ, 少シモ分裂スルコトナキモノニシテ, 其營養細胞ト同値ノモノカ又ハ特別ノ生殖細胞ナルカハ詳ナラズ. 多クハいぎす科ノ植物ニ生ズ.

(七)

類化絲, Assimilationszellen, Assimilationsfäden, Assimilatory filament; 類化作用ヲナス細胞ノ絲狀ニ連ナレルモノ.

前茁體, Vorkeim, Prothallium; 多クノ隱花植物ノ孢子ガ萌發スルニ當リ, 先ヅ母體ト同一ノ體形ヲナサズシテ, 之ト異ナリタル體ヲナシ, 後其モノヨリ母體ト同一ノ體ヲ生ズ. 此母體ト同様ナラザル體形ヲ前茁體ト云フ.

ERRATA.

No. 3. p. 31-35: read "*Haarblätter*" for "*Haarblättern*."

„ „ p. 31, line 7: read *alternately* for *altenatly*.

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ILLUSTRATIONS OF THE MARINE ALGÆ OF JAPAN.

Vol. I. No. 5.

BY

K. OKAMURA, *Rigakuhakushi.*

TOKYO.

1901.

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K. OKAMURA.
ALGÆ JAPONICÆ EXSICCATÆ.

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- | | |
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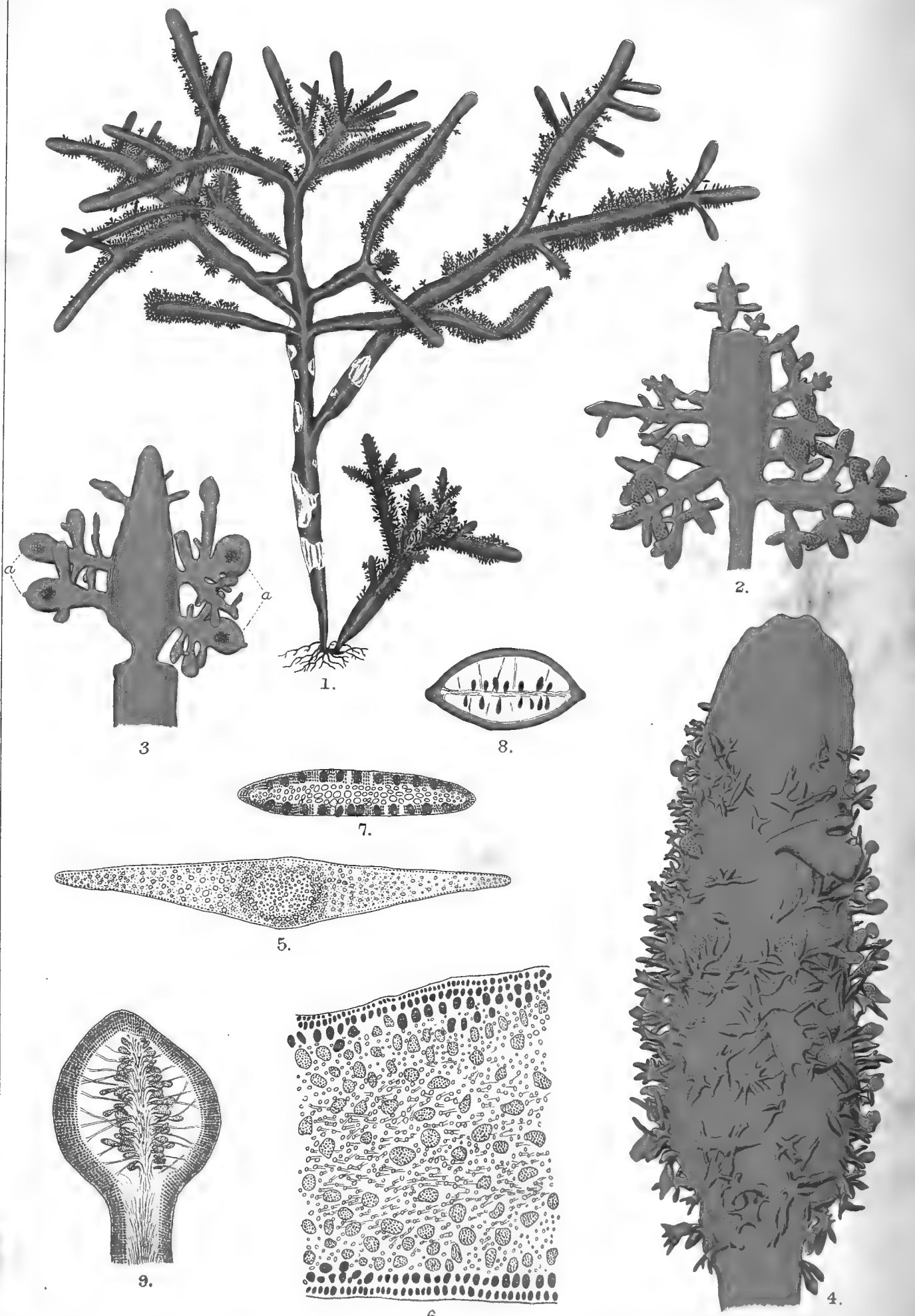
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K. Okamura del.

Gelidium japonicum (Harv.) Okam.

おとくさ

PLATE XXI.

Gelidium japonicum (Harv.) Okam.

GELIDIACEÆ.

Nom. Jap.: *Oni-kusa*.

Suhria japonica Harv. Alg. Wright., no. 26; De Toni Phyc. Jap. Nov. (1895), p. 22, no. 21; Id. Syll. Alg. Vol. IV, p. 164; J. Ag. Epicr. p. 554 (Nomen); Okam. Alg. Jap. Exsic. no. 6.—*Porphyroglossum japonicum* (Harv.) Schm. Neue jap. Florid., (1894), p. 7.

Root fibrous, branching. *Fronde*s single or cæspitose, ancipito-compressed, linear, midribbed, branching or dividing from sides and proliferate from both margins and surfaces, 4–20 cm. high, 1.5–2 mm. broad. Branches are sometimes more or less regularly alternate, sometimes much more irregularly; and by the growth of proliferations into branches, ramification becomes more and more irregular. Proliferations, which are narrowed at bases, arise from the midrib, both margins, and intramarginal portions of both surfaces as well as from ends of branches. At the beginning, proliferate ramuli are very minute and ciliary; soon they grow up into narrow spatulate or oblong ramuli which usually become 2–3 times pinnately compound, rarely remaining simple or foliaceous, especially in tetrasporic frond. Branches are rarely free from marginal proliferations, while their surfaces are often void of them. In a robust form, proliferations are so much dense that the rachis is invisible through them and the latter seems as if densely loaded with short and echinate ramuli. There is no definite order for the disposition of branches which arise very

patent, often assuming almost horizontal position. Apices of all sorts of branches terminate in truncate or blunt ends. Margin is flat and entire, excepting lower portion of the stem where both margins often become rough by wearing. The midrib is thick and conspicuous in full-grown parts, but is fainter in younger or terminal portion of branches.

Fruits of both kinds are produced from terminal pinnulæ of proliferated pinnæ. *Cystocarps* oval or roundish, slightly flattish, blunt or apiculated and consist of two chambers. *Tetrasporangia* densely collected in unaltered or slightly dilated pinnulæ. *Antheridia* unknown. *Colour* deep purplish-red. *Substance* rigid and cartilaginous, becoming almost horny after drying. The plant does not adhere to paper in drying.

Hab. On rocks, stones and shells, extending from high tide mark to the depths of 10-15 fathoms. Taiwan (Formosa), Hiuga, Tosa, Shima, Cape Irako (Prov. Mikawa), Sagami, Awa, Kadzusa, Hitachi. Fruits—Summer.

Suhria japonica has been first described by Harvey in 1859, from the material collected at Shimoda (Prov. Idzu) by C. Wright. Since that time, no writer has made study of this plant till the appearance of Schmitz's work on *Gelidiaceæ* (Schm. l.c.), who made a suggestion that *Suhria japonica* should be ranked among *Porphylogossum*. And here I want to make a claim for referring this plant to the genus *Gelidium* with the following reason.

That *Suhria japonica* should not be allied with *Suhria vittata* (L.) J. Ag., the typical species of the genus *Suhria*, I am of the same opinion with Schmitz who first made the remark on this point. *Suhria vittata* has, as it is well known, rather thin and broadly linear-lanceolate, simple or irregularly branched, midribbed

frond which is furnished with obovato-linear,—“unverzweigte”¹⁾ or very slightly branched, but not pinnately compound,—fertile pinnæ, proliferating mostly from margins as well as from the midrib. *Suhria japonica* has more narrowly linear and *pinnately* divided frond having *decomposito-pinnate*, linear ramuli which are proliferated both from margins and surfaces. Plants having such different habit, I want to say, should not be kept in one and the same genus.

As to Schmitz's view for classing *Suhria japonica* in the genus *Porphyroglossum* I am quite far from agreeing with him. *Porphyroglossum Zollingeri* Kuetz.²⁾ has an ecostated, simple or sparingly branched and undulated frond, from whose surfaces, either median or otherwise,—and not from margin (?)—very numerous, foliaceous, simple, minute and linear pinnulæ are proliferated. The mode of ramification of *Suhria japonica*, as it is shown in proliferating pinnæ, can be said to be nothing but pinnate, though in some forms very few ordinary branches are present. The plant in question has midribbed frond and is furnished with pinnate proliferations, arising from both surfaces and margins.

Now, since my discovery of *Gelidium subcostatum* Okam.³⁾ which has midribbed frond, Schmitz has studied the plants which were considered to be related to *Gelidiaceæ* up to that time and has brought some important changes to the classification of *Gelidiaceæ* in general; and consequently, the diagnosis of *Gelidium* has suffered variations in certain points. And thus, the presence of midrib in an allied alga gives no objection for placing it in that genus. *Gelidium pristoides* (Turn.) Kuetz., again, with which the

1) Schmitz l.c., p. 6.

2) As to *Porphyroglossum Zollingeri* Kuetz., I am sorry to say, I have no specimen to examine and I have to study it only from the illustrations given in Kuetzing's Tab. Phyc. Vol. XIX, t. 45 and descriptions given in literature.

3) Schmitz l.c., p. 1-2, Taf. X.

alga in consideration shows many points of resemblances, has simple or decomposite proliferations either from the midrib or surfaces as well as from margins, making the proliferations to be no hinderance for ranking related alga among *Gelidium*. Still again, the mode of ramification in *Suhria japonica* is pinnate, as I have already remarked, and both kinds of fruits are formed, as in many species of *Gelidium*, beneath the apices of terminal pinnulæ of proliferated pinnae, which is also the case in *Gelidium pristoides*. From the points so far stated, I think it more proper to place *Suhria japonica* in *Gelidium* than putting it in *Suhria* or in *Porphyroglossum*.

Among hitherto-known species of *Gelidium*, the present alga has so much remarkable resemblance with *Gelidium pristoides*, the specimens of which I have in my herbarium, that the illustrations given in Kützing's Tab. Phyc. Vol. XVIII, t. 65 remind us, at first glance, a certain form of *Suhria japonica*. The chief differences are that our alga has broader size of frond and non-denticulate sporophylls.

In Martens' Preus. Exped. n. Ost-Asien, Tange, p. 133, *Gelidium pristoides* Turn. is enumerated among our marine flora as collected by Siebold and De Toni mentions the same species in his Phyc. Jap. Nov. p. 22. *Gelidium pristoides*, however, does not grow in this country, as far as my knowledge goes, and I want to take off that species from the list of our marine algæ, notwithstanding of my ignorance of Siebold's specimens, as I believe it to be nothing but *Suhria japonica*.

Plate XXI. Fig. 1: *Gelidium japonicum* bearing tetrasporangia, in nat. size.—Fig. 2: portion of branch bearing tetrasporic pinnulæ, slightly magnified.—Fig. 3: portion of branch

bearing cystocarpic pinnulæ, *a*, slightly magnified.—**Fig. 4:** portion of branch rather densely loaded with tetrasporic pinnulæ, $\frac{12}{1}$.—**Fig. 5:** cross-section of upper branch, moderately magnified.—**Fig. 6:** portion of the same more highly magnified, $\frac{240}{1}$.—**Fig. 7:** cross-section of tetrasporic pinnulæ, slightly magnified.—**Fig. 8:** cross-section of cystocarp, slightly magnified.—**Fig. 9:** longitudinal section of the same, $\frac{37}{1}$.

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Gelidium (てんぐさ屬)ノ性質ハ第一卷第一冊第五頁ニアリ。

Gelidium japonicum (Harv.) Okam.

おにくさ

てんぐさ科

Suhria japonica Harv. Alg. Wright., no. 26; de Toni Phyc. Jap. Nov. (1895), p. 22, no. 21; Id. Syll. Alg., Vol. IV, p. 164; J. Ag. Epicr. p. 554 (Nomen); 岡村, 日本海藻標品第六號.—*Porphyroglossum japonicum* (Harv.) Schm. Neue jap. Florid., (1894), p. 7.

附着器ハ纖維狀ニシテ分枝ス。體ハ單獨或ハ叢生シ、扁壓ニシテ兩縁ニ薄ク、線狀、中肋ヲ存シ、兩縁ヨリ枝ヲ分チ、且ツ縁邊及ビ兩面ヨリ副枝ヲ生ズ、高サ4-20cm., 幅1.5-2mm. ナリ。枝ハ時ニ多少規則正シク互生シ、時ニ不規則ナリ; 而シテ副枝ノ伸長シテ大ナル枝トナルモノアルニ依リ、分枝ノ法益々不規律トナル。副枝ハ基部狹ク、中肋並ニ兩縁及ビ兩面ノ中肋ノ左右ノ部分ヨリ出デ、又枝端ヨリ出ヅ。其始メ副枝ノ出ルヤ、甚ダ微小ニシテ眉毛ノ如ク細ク、漸ク長ジテ細キ筈形又ハ長橢圓狀ノ小枝トナリ、通常二三回羽狀ニ分ルレドモ、稀ニ單條ニ止リ、又ハ廣ガリテ葉狀ヲナス; 斯ノ如キハ殊ニ其四分孢子ヲ生ズルモノニ於テ然リトス。副枝ガ枝ノ縁邊ヨリ生ゼザルコトハ極メテ稀ニシテ、常ニ之アレドモ、其枝ノ兩面ハ往々之ヲ存セズシテ平坦ナルコトアリ。成長ノ強盛ナル

體ニアリテハ、副枝ノ生ズルコト甚ダ多ク且ツ密ニシテ、其密ナルガ爲ニ枝ハ恰モ短キ刺ヲ以テ密蔽セラレタル如キ觀ヲ呈シ、刺ノ間ヨリ枝ノ面ヲ透視スルコト能ハザル程ナルコトアリ。枝ノ列ビ方ニハ一定ノ正シキ順序ナク、枝ハ甚シク廣開シ、往々略ボ水平ノ位置ヲ取ル。各種ノ枝ノ頂端ハ截形又ハ鈍圓ニ終ル。縁邊ハ平坦ニシテ全縁、只莖部ノ縁邊ハ波濤ノ爲ニ破損シテ粗糙トナル。中肋ハ太クシテ、充分成長シタル部分ニハ明カナリ、然レドモ幼部又ハ枝ノ上部ニハ稍不明ナリ。

兩種ノ實ハ副出シタル羽枝ノ小羽枝ノ頂部ニ生ズ。囊果ハ卵圓形ニシテ稍扁ク、頂端鈍圓若クハ微凸頭ヲ有シ、此屬ノ特徴タル造構ヲ存シテ二室ヨリ成ル。四分孢子囊ハ上部ノ小羽枝ニ群生シ、其小羽枝ハ全ク變形スルコトナク又ハ稍擴ガレリ。精子器ハ未詳。色ハ濃紫紅色ナリ。質硬キ軟骨質ニシテ乾燥スルトキハ殆ド角質トナル。體ハ乾燥スルトキハ紙ニ附着セズ。

產地。岩石、貝殻等ノ上ニ生ジ、高潮線ヨリ 10-15 尋ノ深所ニ産ス。臺灣、日向、土佐、志摩、伊良湖岬(參河)、相模、安房、上總、常陸。果實—夏季。

効用。凍瓊脂製造ニ用キル。

本植物ハ本邦特産ノ種類(支那、朝鮮ニハ或ハ之アランカ)ニシテ、Charles Wright 氏ガ伊豆國下田ニ於テ採集シタル材料ニ依リ、Harvey 氏之ヲ *Suhria japonica* ト命ジ一千八百五十九年世ニ公ニセリ。爾來、一人モ此植物ニ就テ研究シ説ヲナ

セルモノナカリシガ、遂ニ Schmitz 氏ノ研究 (Schmitz 上記ノ書) ノ出ルニ至テ、氏ハ之ヲ *Suhria* 屬ニ入ル、ノ不當ニシテ、*Porphyroglossum* 屬ニ入ルベキモノナルコトヲ論ゼリ。余ハ以下説ク所ノ論據ニ依リ之ヲ *Gelidium* (てんぐさ屬)ニ移サントス。

Suhria japonica Harv. (おにくさ) ノ *Suhria vittata* (L.) J. Ag., 則チ *Suhria* 屬ノ模範タル種、ト類縁ヲ有セザルコトハ余モ Schmitz 氏ト同意ニシテ、氏ハ實ニ始メテ此説ヲナセシ人ナリ。 *Suhria vittata* ハ、人ノ能ク知ル如ク、稍薄クシテ單條又ハ不規則ニ分枝シタル廣キ線狀——披針狀ノ中肋アル體ヲ有シ、主トシテ其兩緣ヨリ并ニ中肋ヨリ副出スル羽枝ニ實ヲ生ズ; 此羽枝ハ倒卵形——線狀ニシテ (枝ヲ分ツコトナク)¹⁾ 或ハ極メテ僅ニ分枝ス、然レドモ複羽狀ナルコトアラズ。 *Suhria japonica* ハ *Suhria vittata* ヨリハ細キ線狀ニシテ羽狀ニ分レタル體ヲ有シ兩緣并ニ兩面ヨリ複羽狀ニシテ線狀ノ小枝ヲ副出ス。余ハ言ハントス、斯ノ如ク性質ノ異ナリタル植物ヲ同一屬中ニ收ムルハ決シテ當ヲ得タルモノニアラズト。

Schmitz 氏ハ *Suhria japonica* ヲ *Porphyroglossum* 屬中ニ置カントスルノ意見ヲ有スレドモ、余ハ此説ニハ同意スル能ハズ。 *Porphyroglossum Zollingeri* Kuetz.²⁾ (此屬ハ此一種ノミナリ) ハ中肋ナクシテ、單條又ハ僅ニ分枝セル體ヲ有シ、其緣邊ハ波皺ヲナス、而シテ中央部ニ沿ヒ若クハ其他ノ部分ヨリ——然レドモ緣邊ニハナキ?——甚ダ多數ニ線狀ノ羽枝ヲ副出ス; 羽枝ハ

1) Schmitz 上記ノ書第六頁。

2) *Porphyroglossum Zollingeri* ノ標品ハ余不幸ニシテ見ル能ハズ、只 Kuetzing Tab. Phyc. Vol. XIX, t. 45 ニアル圖ト諸書ニ記サレタル性質トヨリ此種ノ形狀ヲ知ルノミ。

八二

單條ニシテ、小サク、葉狀ナリ。 *Suhria japonica* ノ分枝法ハ、時ニハ極メテ少ナキ枝ヲ生ズルモノナキニアラザレドモ、其副枝ニ於テ明カナルガ如ク、羽狀ト云フノ外ナシ；而シテ體ハ中肋ヲ存シ、羽狀ニ分枝セル副枝ヲ其兩面及ビ兩縁ヨリ生ズ。

儲、曩キニ余ガてんぐさノ一種ニシテ中肋ヲ存スル種類ナル *Gelidium subcostatum* Okam. (ひらくさ, Schmitz 上記ノ書, 第一頁, 第十圖版) ヲ發見シ、之ヲ Schmitz 氏ニ送リタルヨリ、氏ハ其當時てんぐさ科ニ屬スルモノトシテ知ラレタル藻類ヲ研究シ、其結果トシテ、てんぐさ科全般ノ分類ニ係ル重要ナル變動ヲ生ジ、從テ、てんぐさ屬ノ性質モ、其以前ニ定メラレタルモノヨリ幾分ノ變化ヲ受クルニ至レリ。是ガ爲ニ、てんぐさ屬ニ類縁ヲ有スル海藻ニ於テ、中肋ヲ存スルコトハ、之ヲ其屬中ニ收ムルニ就テ別ニ異論アル筈ナシ。

次ニ、*Gelidium pristoides* (Turn.) Kuetz. (Schmitz 氏ノ研究ノ結果此屬ニ編入セラレタルモノニシテ其以前ハ *Suhria pristodes* J. Ag. ト稱セラレタルモノナリ) ハ本種ト多數ノ類似スル點ヲ有スルモノニシテ、體ノ中肋、兩面並ニ兩縁ヨリ單條又ハ分枝セル副枝ヲ生ズ；其副枝ヲ生ズルモノニシテ *Gelidium* 屬中ニ編入セラルゝ上ハ、中肋ヲ存スルコトモ、一ノ關係アル藻類ヲ *Gelidium* 屬中ニ置クニ就テ、不當ト云フノ理ナシ。殊更、*Suhria japonica* ノ分枝法ハ、余ノ既ニ説明シタル如ク、羽狀ニシテ、兩種ノ實ハ副出セル羽枝ノ上部ニアル小羽枝ノ頂端ノ下ニ形成セラルゝコト *Gelidium pristoides* ニ同ジク、其實ノ出來方ハ *Gelidium* 屬ノ種類ニ見ル所ナリ。以上論ズル所ヨリ、余ハ *Suhria japonica* ヲ *Suhria* 又ハ *Porphyroglossum* 中ニ置クヨリハ之ヲ *Gelidium* 中ニ置クラ以テ妥當ナリト信ズ。

Gelidium 屬中從來知ラレタル種類ノ中ニ於テ *Gelidium pristoides* ハ本種ト甚ダ類似スル點ヲ有スルモノナリ; 其如何ニ酷似スルカハ Kützinger's Tab. Phyc. Vol. XVIII, t. 65 ニ掲ゲタル *Gelidium pristoides* ノ圖ヲ見ル時ハ, 宛モ *Suhria japonica* ノ或形狀ノモノヲ畫キタルニアラザルカヲ疑ハシムル程ナリ. *Gelidium pristoides* ノ標品ハ余之ヲ藏スルヲ以テ比較研究スルノ便アリ. 其之ト異ナル主點ハ, 本種ニ於テハ, 體ノ稍幅廣キト實ヲ有スル枝ノ縁邊ニ鋸齒ナキトニアリトス.

Martens' Preus. Exped. n. Ost-Asien, Tange, p. 133 ニ, Siebold 氏之ヲ本邦ニ採集シタリトシテ本邦産藻類中ニ數ヘタルアリ, De Toni 氏亦之ヲ氏ノ Phyc. Jap. Nov. p. 22 ニ掲ゲタリ. 然レドモ, 余ノ知ル所ヲ以テスルニ, *Gelidium pristoides* ハ本邦ニハ産セズ; 之ニ依テ余ハ Siebold 氏ノ採集シタル標品ヲ見ザルニモ拘ハラズ, 本邦産藻類ノ目錄中ヨリ之ヲ删除セントス, 蓋シ余ハ之ヲ以テ *Suhria japonica* ニ外ナラズト信ズレバナリ.

第二十一圖版. 第一圖: 四分胞子囊ヲ有スルおにくさ, $\frac{1}{1}$. — 第二圖: 四分胞子囊ヲ有スル小羽枝ヲ着ケタル枝ノ一部, 少シク廓大. — 第三圖: 囊果, α , ヲ有スル小羽枝ヲ着ケタル枝ノ一部, 少シク廓大. — 第四圖: 四分胞子囊アル小羽枝ヲ稍密ニ副出シタル枝ノ一部, $\frac{1}{1}^2$. — 第五圖: 上部ノ枝ノ横斷面, 廓大. — 第六圖: 同上ノ一部ヲ更ニ廓大シタルモノ, $\frac{240}{1}$. — 第七圖: 四分胞子囊アル小羽枝ノ横斷面, 少シク廓大. — 第八圖: 囊果ノ横斷面, 少シク廓大. — 第九圖: 囊果ノ縦斷面, $\frac{37}{1}$.





K Okamura del.

Callophyllis japonica Okam.

ほそばのとさかもどき

PLATE XXII.

Callophyllis japonica Okam.

GIGARTINACEÆ.

Nom. Jap.: *Hosoba-no-tosakamodoki*.

Callophyllis japonica Okam. in J. B. de Toni u. Okam. Neue Meeresalgen aus Japan, p. 77, Taf. XVI, fig. 13-17 (Ber. d. deut. bot. Gesellsch., Jahrg. 1894); De Toni Phyc. Jap. Nov., (1895), p. 25, no. 41; Id. Syll. Alg. Vol. IV, p. 285; Okam. Alg. Jap. Exsic. no. 11.

Fronde cæspitose, rising from a circular disc, stipitate, with a short compressed stem which soon passes into cuneate base of flat, linear, dichotomo-flabellate frond, 5-17 cm. high. Segments irregularly dichotomous, with upper ones sometimes somewhat alternate, erecto-patent, linear or linear-cuneate, 2-5 cm. broad, slightly widening towards forked portions, rounded at axils. Margin furnished with interrupted laciniaë which are simple or compound; simple ones subulate and teeth-like; compound ones lobed and lacinulated. In some specimens, almost all margin is lacinulated leaving no gulf entire, as it is illustrated in fig. 2. Cystocarps are immersed in the substance of laciniaë, prominent above either surface of frond and crowned with three to five or more blunt horns in which orifices are formed from within outward. They are produced single or three to four or more aggregated. *Tetrasporangia* are scattered over the whole surface of frond, oblong, cruciate, disposed among cortical cells. *Colour* beautiful rosy-red. *Substance* thin and membranaceous and often becomes rather cartilaginous when old. Plant does not adhere to paper in drying.

Hab. On rocks and other substances between tide marks.

Hiuga, Tosa, Shima, Mikawa, Tōtōmi, Suruga, Sagami, Bōshū.
Fruits—Summer.

This species is most nearly resembling to *Callophyllis rhynchocarpa* Rupr. and, beyond any question, it has close affinity with the latter. But, *Callophyllis rhynchocarpa* has entire margin for a longer distance than it is in the present plant, and toothed or lacinulated portions seem to be mostly limited to upper portions, as I judge from a specimen of it collected at the eastern coast of Sakhalin.

Plate XXII. **Fig. 1:** *Callophyllis japonica* with cystocarps, in nat. state and size.—**Fig. 2:** sterile frond with much more laciniated margin, $\frac{1}{4}$.—**Fig. 3:** cross-section of frond, $\frac{8.5}{1}$.—**Fig. 4:** portion of the cross-section of frond bearing tetrasporangia, $\frac{240}{1}$.—**Fig. 5:** portion of frond bearing cystocarps, slightly magnified.—**Fig. 6:** cystocarps seen from above, $\frac{22}{1}$.—**Fig. 7:** longitudinal section of cystocarp, $\frac{5}{1}$.—**Fig. 8:** longitudinal section of cystocarp, more highly magnified, $\frac{35}{1}$.—**Fig. 9:** nucleoli, $\frac{240}{1}$.

第二十二圖版

Callophyllis Kützing.

とさかもどき屬

すぎのり科

體ハ扁壓, 扁平或ハ葉狀ニシテ, 細胞ト絲トヨリ成ル: 内層ハ縦ニ走レル細胞列ヨリ成リテ, 其處此處ニ叉狀ニ分レ以テ髓層ヲナス, 而シテ外面ノ方ニハ, 多數ノ屢々分枝セル且ツ絲狀ニ列セル絲ヲ出ス; 此皮層トナルベキ絲ハ, 外方ニハ小ナル細胞ヨリ成リテ密ニ相束集シ, 表面ニ直角ニ列シテ以テ皮層ヲナス, 而シテ内方ニハ, 其細胞ハ稍大ニシテ稍緩ク配置セラレ, 短キ關節ヨリ成レル根絲細胞ヲ以テ圍繞セラル; 髓層ノ細胞ハ時ニ細クシテ長キ關節ヲ有シ, 時ニ大ナル細胞ヨリ成リ, 何レモ概テ短キ關節ヨリ成レル多數ノ根絲細胞ヲ以テ圍マル. 髓層ノ細胞及ビ皮層ノ内部ノ細胞ハ澤山ニ原形質連絡ノ點ヲ存ス; 細胞間填充ノ粘質ハ時ニ強靱ナルアリ, 時ニ柔弱ナルアリテ, 時トシテハ甚ダシク體ノ内部ニ豐メルコトアリ.

四分孢子囊ハ長橢圓形ニシテ十字様ニ分レ, 皮層細胞ヨリ變成シ體ノ表面ニ散在ス. **胎原列**ハ結實スベキ部分ニ於テ, 皮層ノ内部ニ多數ニ散在シ, 可ナリ複雑ナリ(且ツ各種多少ノ變化ヲ示ス): 則チ皮層ノ絲ヲナセル關節絲ヨリ, 一ノ短カキ枝ヲ出シ, 此枝ハ概テ二個細胞ヨリ成リ其基部ノ細胞變ジテ概テ甚シク膨大シタル助細胞ヲ形成ス; 此助細胞ヨリ側部ニ通常三個ノ細胞ヨリ成レル胎原列ヲ出ス; 胎原列ハ鈎狀

ニ屈曲ス、而シテ助細胞ハ此外ニ尙ホ一個ノ細胞ヨリ成レル小サキ枝ヲ出シ、稀ニハ尙ホ多クノ同様ナル胎原列ヲ生ズルコトアリ。胎原列ヲ形成セル細胞ハ(胎心細胞ヲ除ク外)概チ皆側面ニ囊狀ニ膨出シ、屢々鹿角狀ニ分岐ス。受胎作用ヲ終ルヤ、胎原列ノ細胞ハ一塊ニ癒着シテ星形ノ體ヲナス。癒合シタル助細胞ハ體ノ内方ニ伸長シテ成胞絲ヲナシ、且ツ多數ノ太キ枝ヲ生ズ;此枝ハ其附近ニ於ル組織ノ弛緩シタル部分ノ方ニ甚ダシク分枝シ、其部分ノ組織ニハ更ニ多數ノ根絲細胞ノ形成セラル、ヲ見ル;而シテ助細胞ヨリ出タル枝ハ各方面ニ複總狀ニ分枝シ、多少多ク附近ノ中性ナル組織ノ細胞ト結合ス。此枝ノ先端ハ多少密ニ複總狀ヲナシ、往々中性ナル組織ノ細胞ト連絡點ヲ形成シテ結合シ、其枝ヲ形成セル總テノ細胞ハ胞子トナル。

仁ハ多少瘠セタル絲ヲ以テ不規則ナル網狀ヲナシ、其目ニ、多數ノ不規則ニ且複總狀ニ圍集シタル胞子ヲ存ス;而シテ仁ハ概チ特ニ之ヲ圍ム所ノ絲組織ナクシテ體中ニ埋在シ、或ハ一方ノ面又ハ兩面ニ膨出ス。囊果ハ體ノ表面ニ散在シ、或ハ特ニ縁邊ニ生ジタル小サキ葉ニ限リテ存スルコトアリ。果皮ハ體ノ皮層ガ其部ニ増厚シタルヨリ成レルモノニシテ嘴狀突起ナク又ハ之アリテ、一個又ハ數個ノ多少充分ニ形成セラレタル果孔ヲ開ク;其突起アルトキハ此中ニ果孔ヲ開ク。胞子ハ往々果皮ノ内ニアリテ萌發ス

南方ノ海ニ産スルモノ二三十種ニシテ、其北部ノ海ニ産スル種類ハ僅少ナリ;本邦ニハ此屬ノモノ四五種アリ。

“とさかもどき屬ノ種類ハ外形ニ於テ種々異ナルノミナ

ラズ、體ノ造構ニ於テモ亦少ナカラザル差異アリ、只囊果ノ造構ニ於テハ其差アルコト少ナシ。體ノ内部ノ大ナル細胞ノ間ニアル、小サキ細胞ヨリ成レル根絲細胞ハ、時ニ甚ダ乏シキコトアリ、時ニ甚ダ多數ナルコトアリ；其大ナル細胞ハ多少規則正シク配置セラレ、其内部ノモノハ時トシテハ其外部ニ接スルモノト著シク大サヲ異ニス；且ツ粘質モ體ノ内部ニ於テ時ニ甚ダ乏シクシテ強靱ナルアリ、時ニ多量ニシテ遙ニ柔弱ナルコトアリ。此等ノ點ヨリ、多分此屬ハ多數ノ屬ニ分ルコトアルベシ。從來 *Callophyllis* 屬ト區別セラレタルモノ則チ *Crossocarpus* Ruprecht, *Rhodocladia* Sonder, *Microcoelia* J. Agardh, 及ビ *Ectophora* J. Agardh ハ *Callophyllis* ト精確ニ區別セラレザルナリ。中ニ就キテ、縁邊ヨリ生ズル小サキ成實葉ヲ有スルモノハ *Crossocarpus* Ruprecht トシテ別屬ヲナス”——Schmitz und Hauptfleisch in Engler und Prantl's Pflanzenfamilien, Algen, p. 364.

Microcoelia J. Ag. ノ *Callophyllis* ト異ナル點ハ余曩ニ本圖說第一冊第三圖版第十頁ニ J. Agardh 氏ノ意見ヲ記シタリ。

Callophyllis japonica Okam.

ほそばのとさかもどき (岡村命)

Callophyllis japonica Okam. in J. B. de Toni und Okam. Neue Meeresalgen aus Japan, p. 77, Taf. XVI, fig. 13-17 (Ber. d. deut. bot. Gesels., Jahrg. 1894); de Toni Phyc. Jap. Nov., 1895, p. 25, no. 41; Id. Syll. Alg. Vol. IV, p. 285; 岡村, 日本海藻標品 第十一號.

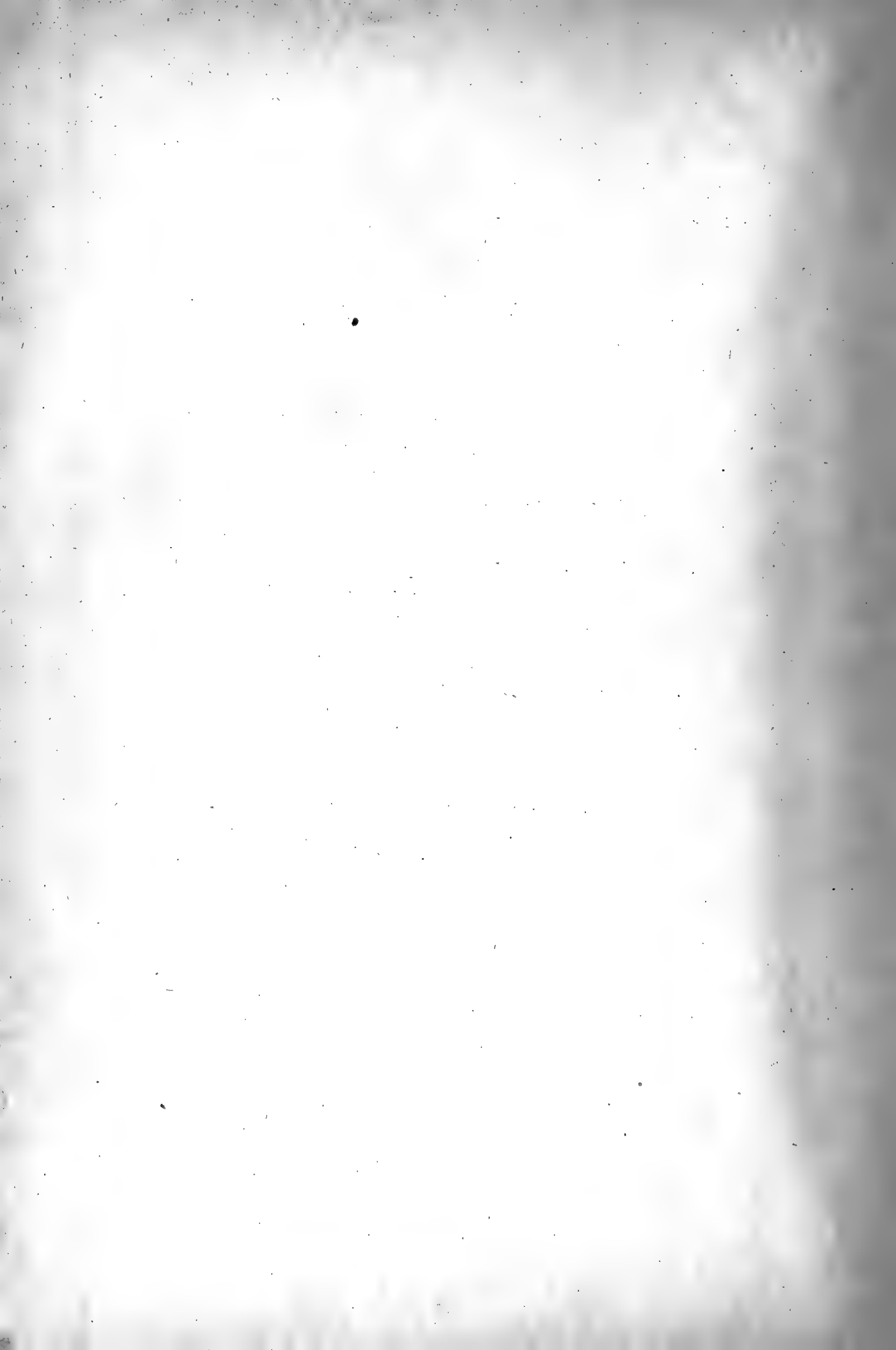
體ハ叢生シ、圓盤狀附着器ヨリ直立シ、短キ扁圓ナル莖ヲ有ス；莖ハ直ニ楔形ニ開展シテ體ノ基部ヲナス；體ハ扁平線狀ニシテ叉狀様扇狀ニ分岐ス、高サ5-17cm.アリ。枝ハ不規則ニ叉狀ニシテ、上部ノモノハ時トシテハ、稍互生シ、直立—廣開シ、線狀或ハ線狀—楔形ヲナシ、2-5cm.ノ幅ヲ有シ、分岐點ノ方ニ少シク廣ガリ、腋圓シ。緣邊ハ連續セザル裂片ヲ存ス；裂片ハ單複ノ二様アリ；其單一ナルモノハ細尖ニシテ齒狀ヲナシ、其複性ナルモノハ往々更ニ分裂シテ小裂片ヲナス。或標品ニテハ、殆ド全體ノ緣邊ニ小裂片ヲ存シテ、少シモ全緣ナル灣狀部ヲ存セザルコト、第二圖ニ示シタルガ如キモノアリ。囊果ハ裂片ノ實質中ニ埋在シ、體ノ何レカ一方ノ面ニ隆起シ、3-5個或ハ尙ホ多數ノ鈍頭ナル嘴狀突起ヲ載ク；此突起ノ内ニ果孔ヲ開キ、果孔ハ内部ヨリ外部ニ形成セラル。囊果ハ一個又ハ三四個乃至尙ホ多數ニ集合スルコトアリ。四分孢子囊ハ體ノ全面ニ散在シ、長橢圓形ニシテ、十字様ニ分レ、皮層ノ内ニ存ス。色ハ鮮紅色ナリ。質ハ薄クシテ膜質ナレドモ老成スルトキハ往々稍軟骨様トナル。體ハ乾燥スルトキハ紙ニ附着セズ。

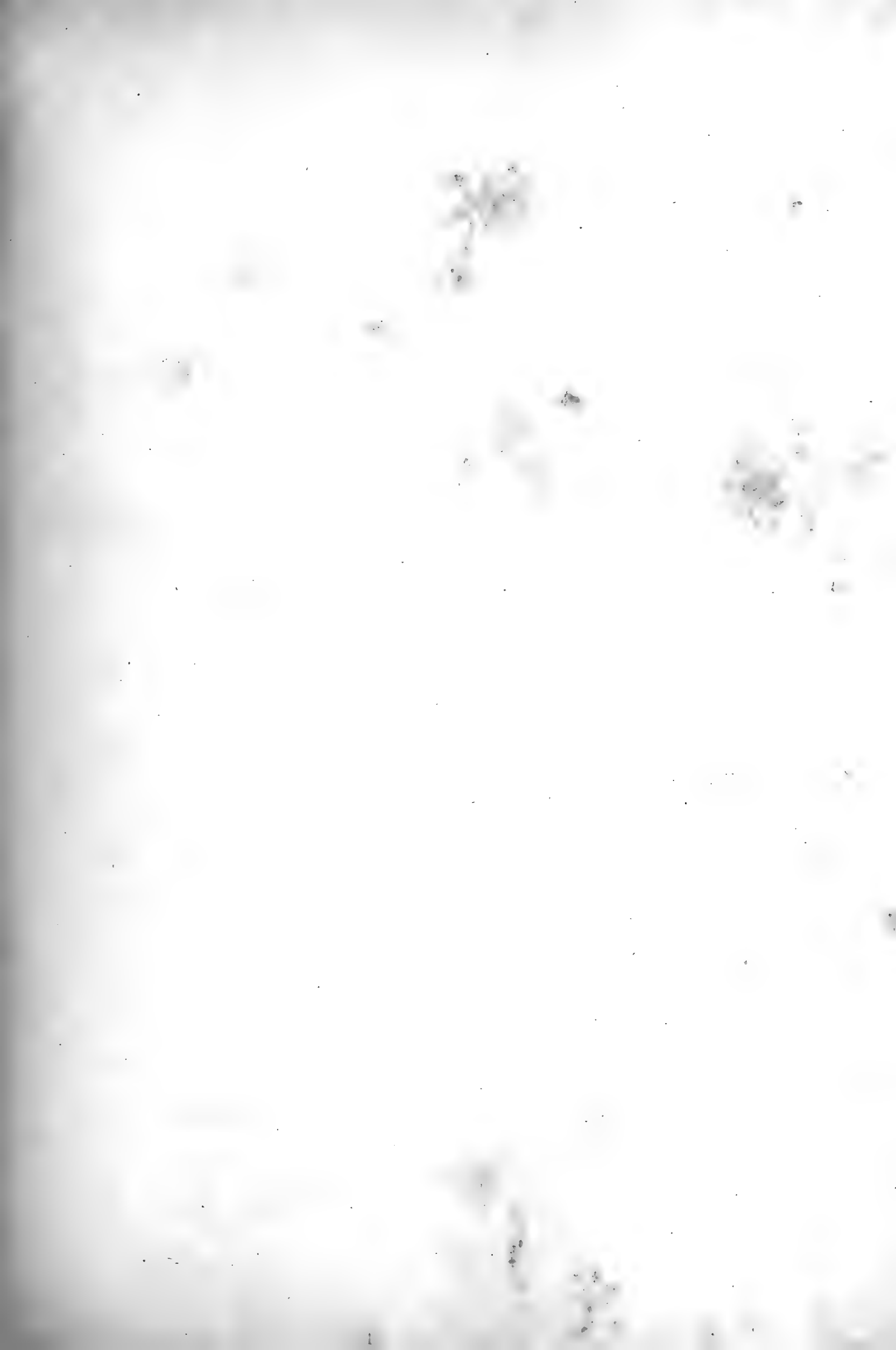
產地。潮線間ノ岩石其他ノモノニ附着ス。日向、土佐、志摩、三河、遠江、駿河、相模、房州。果實—夏季。

本種ハ *Callophyllis rhynchocarpa* Rupr. ニ最モ能ク類似シ、之ト親密ナル類縁ヲ有スルコトハ疑ヲ容レズ。然レドモ、樺太島ノ東岸ニテ獲タル *Callophollis rhynchocarpa* ノ標品ニ依テ見ルニ、其種ハ本種ヨリハ全緣ナル部分ヲ有スルコト長距離ニ亘

リ、其齒狀ノ裂片ヲ有スル部分ハ多クハ上部ノ枝ニ限レルモノハ如シ。

第二十二圖版 第一圖：囊果ヲ有スルほそばのとさかもどきノ自然ノ状態、 $\frac{1}{1}$ 。**第二圖：**縁邊甚シク鋸齒狀ヲナセル實ナキ體、 $\frac{1}{1}$ 。**第三圖：**體ノ横斷面、 $\frac{8.5}{1}$ 。**第四圖：**四分胞子囊ヲ有スル體ノ横斷面ノ一部、 $\frac{240}{1}$ 。**第五圖：**囊果ヲ有スル體ノ一部、少シク廓大。**第六圖：**囊果ヲ上ヨリ見タルモノ、 $\frac{22}{1}$ 。**第七圖：**囊果ノ縦斷面、 $\frac{5}{1}$ 。**第八圖：**囊果ノ縦斷面ヲ更ニ廓大シタルモノ、 $\frac{35}{1}$ 。**第九圖：**小仁、 $\frac{240}{1}$ 。





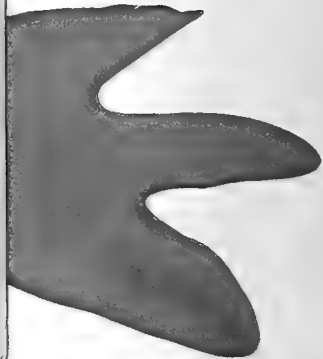
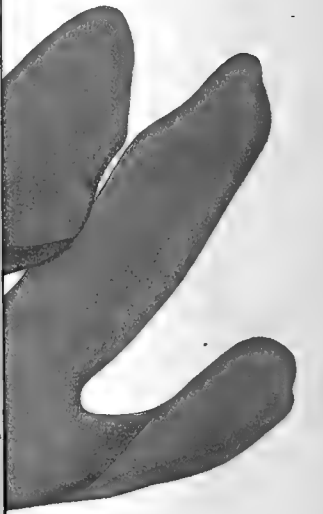


PLATE XXIII.

Gracilaria Textorii Suring.

SPHÆROCOCCACEÆ.

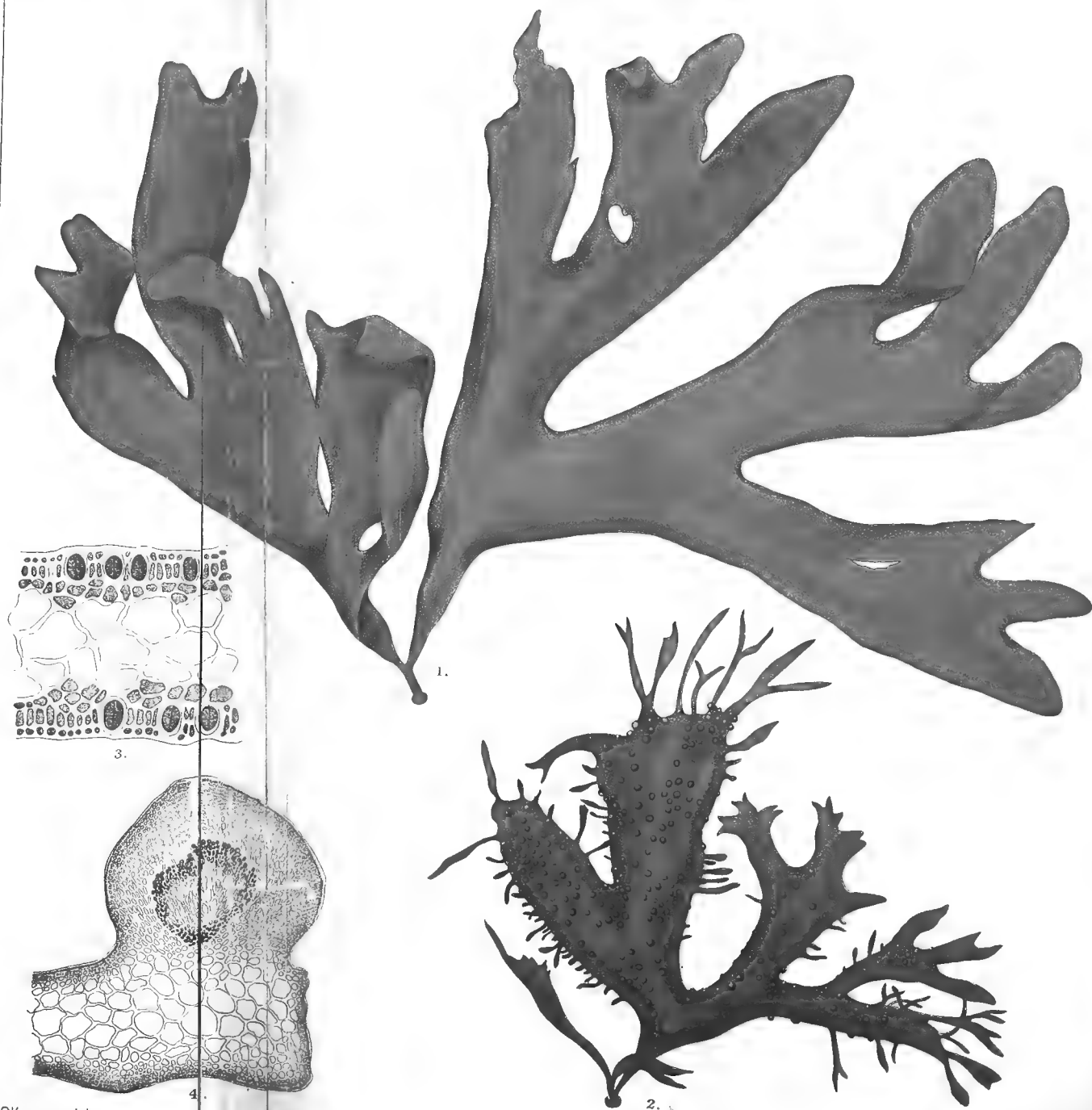
Nom. Jap.: *Kaba-nori*.

Gracilaria Textorii Suring. *Index præcurs.*¹⁾ p. 4; De Toni Phyc. Jap. Nov. p. 27, n. 52; Id. Syll. Alg. Vol. IV, p. 449; Okam. Alg. Jap. Exsic. no. 13.—*Sphærococcus* (*Rhodymenia*) *Textorii* Suring. Alg. japonicæ, p. 36, t. 23; J. Ag. Epicr. p. 426 (Nomen in *Gracilaria*).

Plants cæspitose, rising from a common scutate disc, with a short subcylindrical stem, soon expanding into the cuneate base of frond, 10–20 cm. high. *Frond* flat, coriaceous, dichotomously or subpalmately lobed with broad linear, patent segments whose axils are rounded. Segments, which are 1–3 cm broad, sometimes end in blunt or ligulate, or sometimes in acute or bifid apices; in other cases, terminal segments are much slenderer than the remaining portion, being divided in repeatedly dichotomous manner. Margin is usually flat and entire, sometimes slightly undulated, and is often provided with proliferous segments which are similar in character to other portion. Frond internally consists of large and thick-walled cells, elongated between margins and externally covered by a few layers of cortical cells.

Tetrasporangia are densely scattered over both surfaces of frond. *Cystocarps* are hemispherical or almost globular, densely scattered over both surfaces of frond. Pericarp is thick being constructed of many layers of cells and is provided with a

1) The author has already stated in the preface that literature quoted under each species shall be limited to those which were actually consulted. But hereafter, all the known works relating to every species shall be mentioned, distinguishing those, which he has no facility to refer, in *Italic*.



K. OKamura del.

Gracilaria Textorii Suring.

かばのり

terminal pore. Placenta is hemispherical, lobed or notched on its surface, connected with pericarp by slender sterile filaments, and radiate short spore-filaments from the surface.

Colour pale-browish red. *Substance* thin and membranaceous in younger frond, but becoming thicker when old. When fresh, the plant is coriaceous and brittle, but becoming tenaceous after drying. It imperfectly adheres to paper in drying when fully grown.

Hab. On rocks between tide marks, often preferring sheltered places. Hizen, Tosa, Oshima (Idzu), Sagami, Bōshū, Kadzusa, Oki, Noto. Pretty common along the both coasts of warmer part of this country. Fruits—Summer.

Plate XXIII. **Fig. 1:** sterile frond of *Gracilaria Textorii*, in nat. state and size.—**Fig. 2:** cystocarpic frond, $\frac{1}{4}$.—**Fig. 3:** portion of the cross-section of tetrasporic frond, highly magnified.—**Fig. 4:** longitudinal section of cystocarp, $\frac{5}{1}$.

第二十三圖版

Gracilaria Greville.

おごのり屬

たまみ科

體ハ圓柱狀、扁壓又ハ扁平、叉狀又ハ側面ヨリ分枝シ、細胞組織ヨリ成リ、連絡點ヲ以テ密ニ接着セル細胞ヨリ成ル。内部ノ細胞ハ圓形—多角形ノ大ナル細胞ヨリ成リ、漸次外方ニ小ナリ；皮層ハ小サキ細胞ヨリ成リ、内部ノ細胞トノ區別漸次ニシテ著シカラズ。成長點ハ多少明ニ扇狀ニ放射セル連節絲ヨリナル。粘質ハ饒富ナラズ、然レドモ容易ニ軟化ス。**四分孢子囊**ハ體ノ全面ニ散在シ、十字様ニ分裂ス。**囊果**ハ體ノ表面ニ散在シ、半球狀ニ外面ニ隆起ス。果皮ハ厚ク、仁ヨリ全ク離レ、只稀ニ中性組織ノ絲ヲ以テ果皮ト連絡ス；仁ハ球狀ニ隆起シ、時トシテハ其表面圓クシテ凹凸ナク、時トシテハ明ニ凹凸ヲナシテ平坦ナラズ、而シテ其基部ヲ以テ可ナリ能ク發達シタル胎座ニ接着シ、胎座ノ中央ニ概テ小ナル中心細胞ヲ存ス。孢子ノ附着スル部分ハ細胞組織ニシテ、其細胞ニハ連絡點ヲ存ス、而シテ其部ハ多數ノ分枝セル細胞ノ束狀ニ集マリタルモノヨリ成リ、其上部ハ多少高く放射狀ニ射出シテ、以テ孢子ノ附着スル部分ノ表面ヲナス；此束狀ヲナセル枝ノ上部ハ游離シ、其最上部ノ關節絲ハ頂端ヨリ基部ノ方ニ孢子ヲ形成ス。**精子器**ハ體ノ表面下ニ淺キ窪ヲ生ジテ外面ニ開キ、其窪ノ内壁ノ細胞ヨリ精子細胞ヲ生ズ、

此屬ノ種類ハ凡ソ五十許ニシテ各地ノ海ニ産ス;本邦亦此種類ニ乏シカラズ。

Gracilaria Textorii Suring.

かばのり

Gracilaria Textorii Suring. *Index præcurs.*¹⁾ p. 4; De Toni Phyc. Jap. Nov. p. 27, no. 52; Id. Syll. Alg., Vol. IV, p. 449.—*Sphaerococcus* (*Rhodymenia*) *Textorii* Suring. Alg. Japonicæ p. 36, t. 23; J. Ag. Epicr. p. 426, (*Gracilaria* 中ニ名ヲ掲ゲタルノミ); 岡村, 日本海藻標品第十三號。

體ハ叢生シ,圓盤狀附着器ヨリ直立シ,短キ稍圓柱狀ノ莖ヲ有ス;莖ハ直ニ擴ガリテ楔形ヲナセル體ノ下部トナル,體ノ高サ 10-20 cm. アリ。體ハ扁平ニシテ,革質,叉狀又ハ稍掌狀ニ分レ,各部ハ廣開セル廣キ線狀ノ枝ヲナシ,其腋ハ圓シ。枝ハ 1-3 cm. 幅廣ク,時トシテハ鈍圓又ハ舌狀ノ頂端ヲ有シ,時トシテハ尖銳又ハ二裂セル頂端ヲ有ス;又時トシテハ,上部ノ枝ハ其他ノ部ヨリ遙ニ細クシテ屢叉狀ニ分裂ス。縁邊ハ通常平坦ニシテ全縁,時トシテハ僅ニ波皺シ,往々副枝ヲ生ズ;副枝ハ他ノ部ト總テノ性質ヲ同クス。體ノ造構ハ内部ハ體ノ表面ニ併行シテ横ニ長キ,大ナル,厚キ膜ヲ有スル細胞ヨリ成リ,外部ハ皮層細胞ノ僅層ヲ以テ蔽ハル。

1) 量キニ序文ニ記載セル如ク從來各種ノ下ニ引用シタル書籍ハ余ノ親シク參考シタルモノニ限リタレドモ,本冊ヨリ以後ハ各種ニ關係アル典籍ハ悉ク之ヲ載スルコト、セリ。其余ノ親シク參考スル能ハザルモノハ之ヲ草書體 (Italic) ニ記シ以テ參考シタルモノト別ツ。

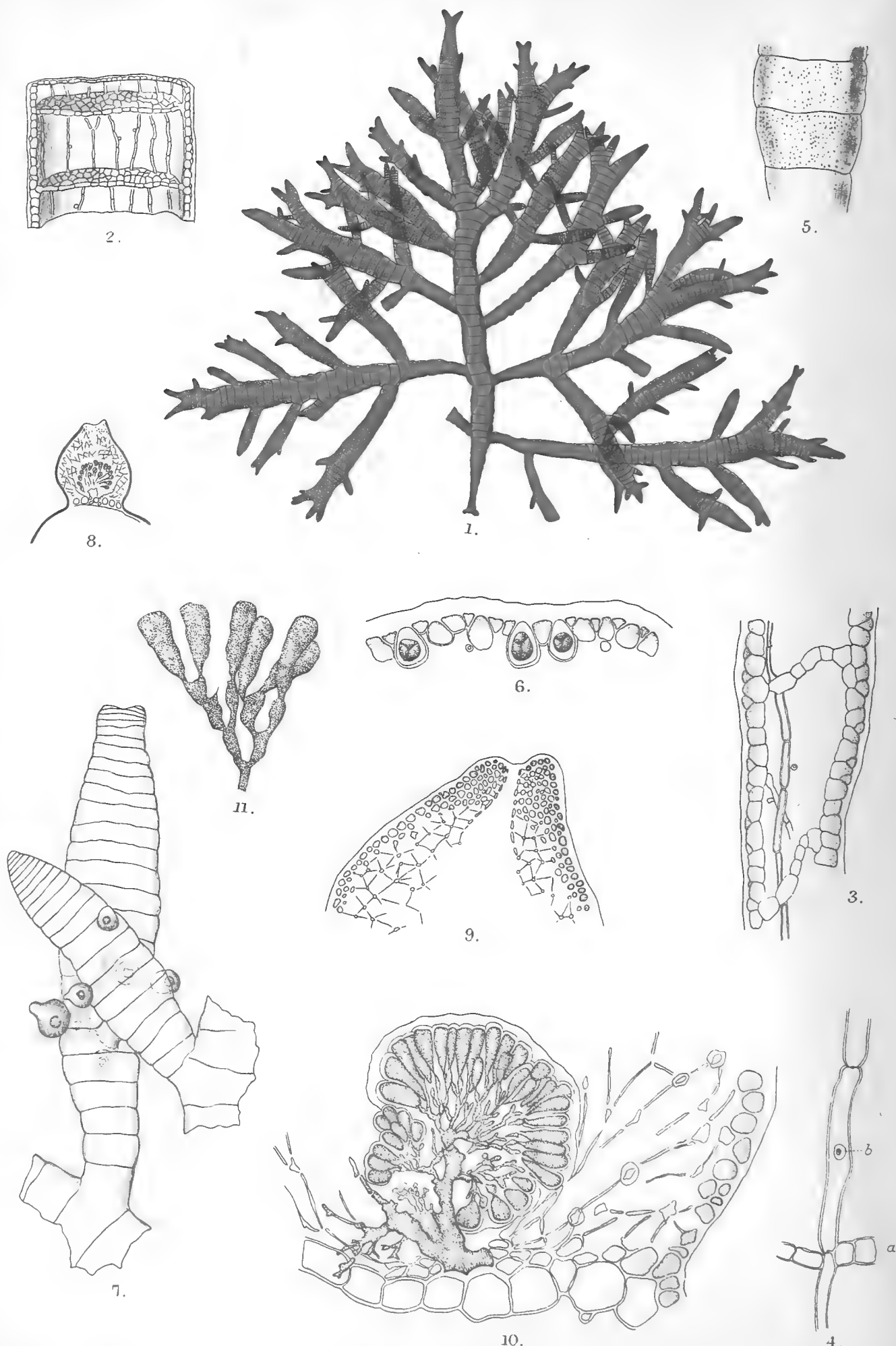
四分胞子囊ハ體ノ兩面ニ密ニ散在ス。囊果ハ半球狀又ハ殆ド球狀ニシテ體ノ兩面ニ密ニ散在ス。果皮ハ厚ク數層ノ細胞ヨリ成リ、頂端ニ果孔ヲ開ク。胎座ハ半球狀ニシテ其表面ハ凹凸ヲ存シ、細キ中性ノ絲ヲ以テ果皮ト連絡シ、胎座ノ表面ヨリ短キ胞子絲ヲ射出ス。

色ハ淡褐紅色。質ハ幼キモノハ薄クシテ膜質ナレドモ、老成スルトキハ厚クナル。生鮮ノトキハ體ハ硬クシテ折レ易ケレドモ、乾燥スルトキハ強靱トナリ、其充分成長シタルモノハ紙ニ附着スルコト密ナラズ。

產地。潮線間ノ岩石ニ附着シ、往々岩陰等靜ナル場所ニ生ズ。日向、土佐、大島(伊豆)、相模、安房、上總、隱岐、能登。本州溫暖部ノ兩沿岸ニ普通ナリ。果實—夏期。

效用。食用トシ又凍脂製造ニ用キル。

第二十三圖版 **第一圖**：かばのりノ實ナキ體、自然大及ビ自然ノ狀態。—**第二圖**：囊果ヲ有スル體、 $\frac{1}{1}$ 。—**第三圖**：四分胞子囊ヲ有スル體ノ横斷面ノ一部、廓大。—**第四圖**：囊果ノ縦斷、 $\frac{5.2}{1}$ 。



K. OKamura del.

Champia Bifida nov. sp.

ひらわつあざさう新種

PLATE XXIV.

Champia bifida Okam. nov. Sp.

RHODYMENIACEÆ.

Nom. Jap.: *Hira-watsunagi-sō*.

Diagn.: *Fronds* perhaps decumbent, loosely intricate by coalescing to each other, compressed, thoroughly articulated, usually 2-3 times distichously pinnate, with branches alternate and sometimes verticillate, patent, often subdichotomous above. Branches narrowed toward bases, acute or bifid at apices, with joints scarcely or slightly constricted and one-third or one-fourth long as broad. *Tetrasporangia* forming a dense orderless aggregation between joints. *Cystocarps* scattered, sessile and ovoid with a prominent carpostome.

Hab. Enoshima and Misaki (Sagami). Fruits—late in Spring.

Descrip.: Plants are loosely intricate with branches coalescing to each other by the formation of short root-like processes, and may perhaps become decumbent by adhering to substratum in the similar way, as this alga is only found washed ashore, and whenever we collect it, we can not obtain a perfect plant with root, though the lower portion of frond is found to taper into subcylindrical stem. *Frond* is compressed, usually branched distichously in 2-3 times pinnate manner, attaining the height of 8-10 cm. in full grown plant. Branches are opposite or alternate, often here and there dichotomous and sometimes furnished with verticillate segments which arise from sides and surfaces. The breadth of branches measures 2-7 mm., usually

5-6 mm. in broader portions. They are gradually narrowed towards their bases, patent and terminate in acute or bifid apices. Joints are not constricted in greater part of frond, especially in younger portions, but slightly constricted in lower and broader parts. The length between joints is one-third or one-fourth as broad.

Frond is tubular, separated into small compartments by thin, cellular, one-cell-layer thick diaphragms at joints. The wall of the tube is thin, internally consisting of a layer of larger roundish cells whose interstices are occupied externally by smaller cortical cells. Through the tube, there run longitudinally many, slender, colorless, simple or branched, articulated filaments which arise from the cells lining the wall of the tube and pass through diaphragms. These filaments or hyphæ are laterally provided with a small globular cells what are known as "bulb-cells." The filaments converge at extremities towards the apical points of frond.

Tetrasporangia are densely collected over the surface between joints of the middle or lower portion of a branch, without any definite order, bulging in towards the interior of frond. *Cystocarps* are scattered around branches, sessile and urceolato-ovoid, and are furnished with prominent carpostome. The inner layer of pericarp is consisted of a beautiful network of slender filaments which arise from the tissue forming the bottom of the spore-cavity. Gonimolobes form a globular mass with densely packed spore-filaments paniculately branching from a large pedicel-cell, making spores to ripe in the terminal articulations and are covered by hyaline gelatinous envelope.

Colour orange-red fading to yellowish-orange in prolonged immersion in fresh water. *Substance* gelatinoso-membranaceous and the plant firmly adheres to paper in drying.

Champia bifida differs from *Champia compressa* Harv., *Ch. Novæ-Zelandiæ* (Hook. et Harv.) J. Ag. and the allied plants chiefly by having bifid apices, subdichotomous branches and broader size of segments.

Plate XXIV. **Fig. 1:** tetrasporic frond of *Champia bifida*, extricated, $\frac{1}{1}$.—**Fig. 2:** semi-diagrammatic tangential section of frond, magnified.—**Fig. 3:** vertical longitudinal section of frond, $\frac{5.2}{1}$.—**Fig. 4:** filament with a bulb-cell, *b*, passing through diaphragm, *a*, $\frac{9.1}{1}$.—**Fig. 5:** portion of segment bearing tetrasporangia, $\frac{5}{1}$.—**Fig. 6:** portion of cross-section of frond bearing tetrasporangia, $\frac{9.1}{1}$.—**Fig. 7:** two cystocarp-bearing branches coalesced, $\frac{5}{1}$.—**Fig. 8:** longitudinal section of cystocarps, $\frac{1.2}{1}$.—**Fig. 9:** upper half of pericarp, showing network, $\frac{5.2}{1}$.—**Fig. 10:** portion of nucleus, showing the mode of ramification of a gonimolobe, which arises from pedicel-cell, and basal portion of pericarp, $\frac{9.1}{1}$.—**Fig. 11:** young carpospores, walls omitted, $\frac{2.20}{1}$.

第二十四圖版

Champia Desvaux.

わつなぎさう 屬

だるす科

體ハ圓柱狀又ハ少シク扁壓ニシテ、内部ハ空虛ナリ、然レドモ細胞組織ニテ成レル薄キ横隔膜ヲ以テ區劃セラレ、種々ニ分枝シ、細胞組織ヨリ成ル。體壁ノ内側ニ沿フテ、多數ノ細キ、髓絲アリテ、體ノ頂端ヨリ下方マデ横隔膜ヲ通ジテ縦走ス；此絲ハ所々ニ小サキ腺ノ如キ細胞ヲ附着ス；體壁ハ時トシテハ厚ク、數層ヨリ成レドモ、概テ薄クシテ、大ナル一層ノ細胞ヨリ成リ、僅層ノ小サキ皮層細胞ヲ以テ蔽ハル。四分胞子嚢ハ體ノ表面ニ密ニ散在シ、體ノ内部ノ方ニ膨レ出デ、三角錐狀ニ分裂ス。嚢果ハ卵圓形ニシテ散在シ、外面ニ隆起シ、果孔ヲ開ク。果皮ノ内部ハ網狀ノ絲組織ヲ存ス。成胞裂絲ハ同時ニ若クハ漸々ニ形成セラレ、多數ノ細胞ヨリ成ル。

諸所ノ暖海ニ産シ凡ソ十種許アリ。

Champia bifida Okam. 新種

ひらわつなぎさう (岡村命)

性質、體ハ恐ラクハ傾臥シ、互ニ癒着スル爲ニ緩ク錯綜シ、扁壓、全體關節シ、通常二三回兩緣ヨリ羽狀ニ分枝ス；枝ハ互生シ、時トシテハ輪生シ、廣開シ、上部ハ往々稍叉狀ヲナス。

九六

枝ハ其基部ノ方ニ細ク、頂端銳角又ハ二裂シ、節部ハ辛フジテクビレ又ハ少シククビレ、其長サハ幅ノ $\frac{1}{3}$ 乃至 $\frac{1}{4}$ 長シ、四分孢子囊ハ節間部ニ密ニ不規則ニ群集ス。囊果ハ散在シ、無柄ニシテ、卵形、突出セル果孔ヲ有ス。

產地、江ノ島及三崎(相模)、果實一晚春。

體ハ短キ根ノ如キ突起ヲ以テ互ニ枝ヲ癒着スルガ爲ニ緩ク錯綜シ、多分ハ同様ノ方法ニテ他物ニ附着シテ傾臥スルナルベシ;此海藻ハ余未ダ其産所ニ就テ採集シタルコトナク、只海濱ニ打揚ラレタルヲ獲タルノミナレバ、根迄完全セル標品ヲ得タルコトナシ、最モ體ノ下部ハ稍圓柱狀ノ莖ニ細ル、體ハ扁壓ニシテ、通常兩縁ヨリ二三回羽狀ニ分枝シ、充分成長スルトキハ 8-10 cm. ノ高サニ達ス。枝ハ對生シ、互生シ又散生シ、往々其處此處ニ叉狀ヲナシ、且ツ時ニ兩縁及ビ表面ヨリ輪生ノ枝ヲ生ズ、枝ノ幅ハ 2-7 mm. ニシテ、通常稍廣キ所ニテ 5-6 mm. ナリ。枝ハ其基部ノ方ニ漸次ニ細ク、廣開シ、銳角又ハ二裂セル頂端ヲ以テ終ル。節部ハ大部分ハクビレズ、殊ニ幼キ部分ニ於テ然リトス;然レドモ、下部及ビ稍廣キ部分ニハ少シククビルコトアリ。節間部ノ長サハ幅ノ $\frac{1}{3}$ 乃至 $\frac{1}{4}$ ナリ。

體ハ中空ニシテ、此空所ハ節部ニ一層ノ細胞ヨリ成レル隔膜ヲ存スルガ爲メニ小サキ室ニ分タル。體壁ハ薄クシテ、内部ハ大ナル圓キ一層ノ細胞ヨリ成リ、其外面ノ間隙ヲ充タスニ小サキ皮層細胞ヲ以テス。體腔内ニハ多數ノ細キ無色ナル、單條又ハ分枝セル關節絲アリテ、體ノ内壁ヲ形成セル細

胞ヨリ起リ、隔膜ヲ通ジテ縦走ス。此絲ノ側部ニ腺細胞ト稱スル小サキ球狀ノ細胞ヲ着ク。此絲ハ各部ノ頂端ノ方ニ集マルモノ、如ク見ユ。

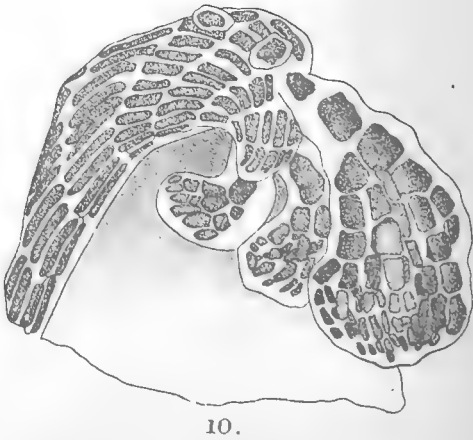
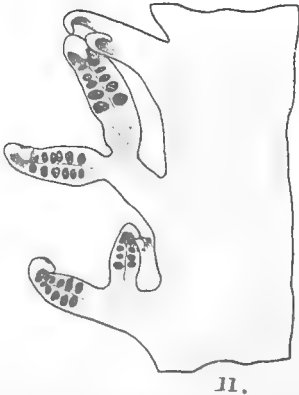
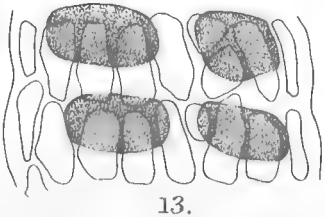
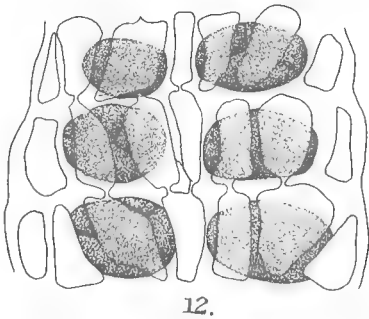
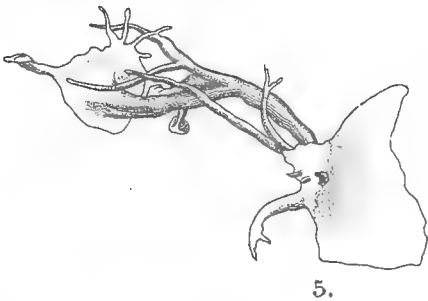
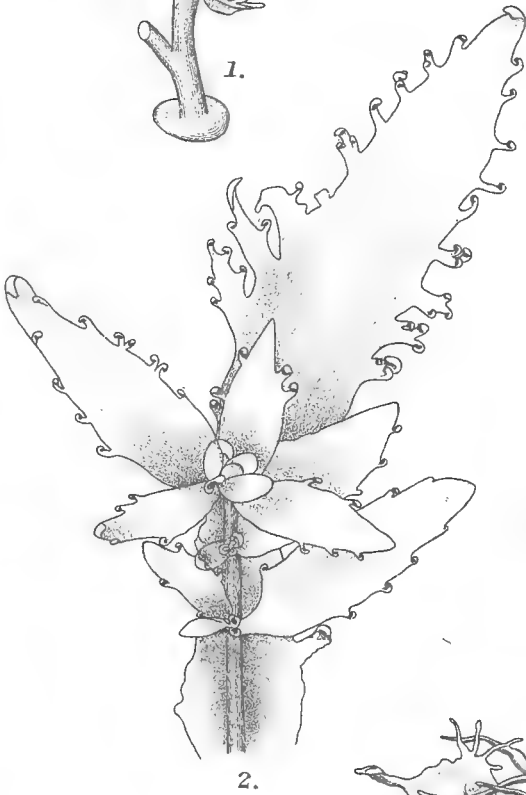
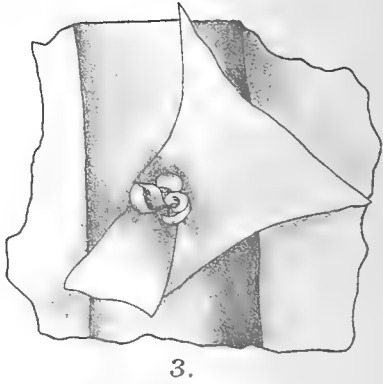
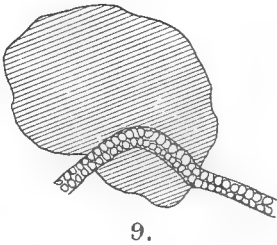
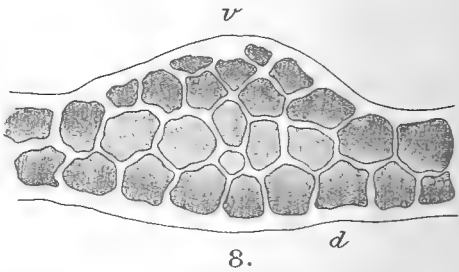
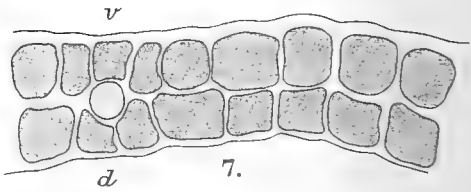
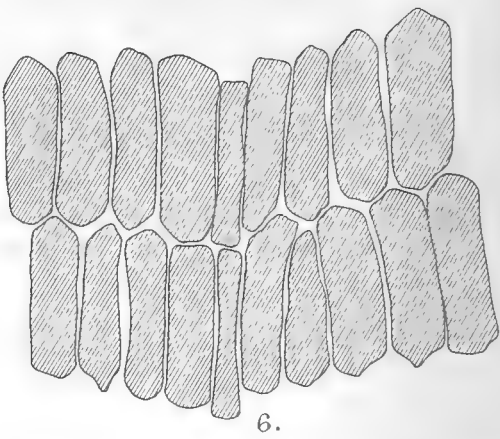
四分孢子囊ハ枝ノ中央部又ハ下部ノ節間部ノ表面ニ一定ノ規則ナク密集シ、體ノ内方ニ膨出ス。囊果ハ枝ノ周圍ニ散在シ、無柄ニシテ、壺狀様一卵形ヲナシ、突出セル果孔ヲ有ス。果皮ノ内層ハ細キ絲ニテ成レル網狀組織ヲ存ス；此絲ハ果腔ノ基底ヲ形成セル組織ヨリ發出ス。成胞裂絲ハ球狀ノ塊ヲナシ、一ノ大ナル仁柄細胞(仁ノ柄ヲナス細胞ノ意)ヨリ複總狀ニ分枝シテ密ニ束集セル孢子絲ヨリ成リ、其頂端ノ關節ニ孢子ヲ熟シ、透明ナル粘膜ヲ以テ蔽ハル。色ハ橙紅色ニシテ、永ク淡水中ニ浸ストキハ紅色ノ液ヲ出シテ橙黃色ニ變ズ。質ハ粘質アル膜質ニシテ乾燥スルトキハ紙ニ密着ス。

本種ハ主トシテ二裂セル頂端ヲ有スルコトト、稍叉狀ノ枝アルコト及ビ各部ノ幅廣キトニ依テ此ト類縁ヲ有スル所ノ *Champia compressa* Harv., *Champia Novæ-Zelandiæ* (Hook. et Harv.) J. Ag. 等ト異ナリトス。

第二十四圖版 第一圖：解キ離シタルわつなぎさうノ四分孢子ヲ有スル體、 $\frac{1}{1}$ 。—第二圖：體ノ表面ニ併行シテ縦ニ斷リタル面ノ稍膜型的ノ圖、廓大。—第三圖：體ノ表面ニ直角ニ斷リタル縦斷面、 $\frac{5}{1}$ 。—第四圖：隔膜、 a 、ヲ通ズル絲ニ腺細胞、 b 、ノ附着スルモノ、 $\frac{2}{1}$ 。—第五圖：四分孢子囊ヲ有スル枝ノ一部、 $\frac{5}{1}$ 。—第六圖：四分孢子囊ヲ有スル枝ノ横斷面ノ一部、 $\frac{2}{1}$ 。—第七

圖：囊果ヲ有スル枝ノ互ニ癒着セルモノ， $\frac{5}{1}$ 。—**第八圖**：囊果ノ縦斷面， $\frac{12}{1}$ 。—**第九圖**：果皮ノ上半部ニシテ網狀組織ヲ示ス， $\frac{52}{1}$ 。—**第十圖**：仁ノ一部ニシテ，仁柄細胞ヨリ分枝セルノ成胞裂絲ノ分枝スル様子ト果皮ノ基部トヲ示ス， $\frac{91}{1}$ 。—**第十一圖**：幼キ果胞子ヲ膜ヲ除キテ示ス， $\frac{220}{1}$ 。





K.Okamura del.

Amansia glomerata C.Ag.

PLATE XXV.

***Amansia glomerata* Ag.**

RHODOMELACEÆ.

Nom. Jap.: *Kiku-hirvodoshi*.

Amansia glomerata Ag. Syst. p. 247; J. Ag. Symb. p. 25; Id. Sp. Alg., Vol. II, p. 1111; Kütz. Sp. Alg. p. 883; Fkbg. Rhodom. p. 416, Taf. I, fig. 19-21; Taf. VI, fig. 14-29.—*Amansia fasciculata* Kütz. Tab. Phyc. Vol. XV, Taf. 4, a-d—*Delisseria rhodantha* Harv. Alg. Telfair. no. 9 in Hook. Journ. of Bot. p. 147, tab. CXXVI.—*Amansia rhodantha* J. Ag. Symb. p. 26.—*Exsicc. Harv. Friendl. Isl. Alg. no. 9.*

Root a circular disc. *Fronds* form densely glomerous tufts, 3-7 cm. high in our specimens. At the beginning, frond is lanceolate and thin membranaceous, with the growing apex rolled toward the ventral surface, pinnulated along margin, and proliferates segments similar to the primary frond from the midrib of the same surface. Proliferated segments are fasciculated after the manner of a rosette, and these segments, after having attained their full length, give rise to other proliferations in their turn. By this way, the simple primary frond becomes decomposed. The midrib is insignificant in a lamina which has no proliferation, but becomes very thick and prominent, when proliferations are produced from certain points of the midrib, by gradual cortication over both of its surfaces, along the line extending from the the points to the base of the lamina. In this manner, the lower portion of the primary frond becomes thicker

and thicker, and by the abrasion of the wing, the midrib changes to the stem which ramifies with no definite order. All the segments are same in shape and other characters. They are lanceolate, rolled up at the apices towards the ventral surface and are furnished with minute pinnæ or "Flankenäste" of German writers, which appears like marginal teeth. Pinnæ, which are of endogenetical origin, incurve towards the ventral side and carry similar pinnulæ along their margins. They remain mostly short, but sometimes grow up into segments similar to the rest. Thus, the ramification is brought about by two ways, firstly by the growth of pinnæ and secondly by resette-like proliferations. Among our specimens, I have seen some forms in which root-like processes are emitted from marginal portion of an older lamina (fig. 5). And in other case, I have detected a plantlet which has developed itself into a separate individual by emitting root-fibres from the lower harmed end of the midrib of lamina (fig. 4). From these instances, the alga seems to adhere to substratum by its parts and not uncommonly to effect vegetative multiplication.

Lamina is entirely destitute of cortication excepting the thickened midrib, and consists of two layers of horizontal rows of elongated, hexagonal cells which are derived from paired pericentral cells disposed on both sides of the midrib. The height of the cells of lamina measures $72-120\mu$ and we may count about 150 cells between margins. Along dorsal median line of lamina, a row of deciduous hair-leaves is arranged, which are branched many times dichotomously. The original lamina can always be seen even in thickly corticated portion such as stem and branches.

Tetrasporangia are formed in slightly altered pinnulæ in double rows along the ventral surface, being covered by two so-called "cover-cells." Pinnulæ which produce tetrasporangia are lanceolate and simple or sparingly branched and are usually

marked by rudimentary growth of hair-leaves. Anthridia and cystocarps are unknown to me at present. *Colour* Beautiful rosy-red. *Substance* of lamina thin and membranaceous, that of stem and midrib cartilaginous. The plant does not adhere to paper in drying.

Hab. Okinawa Isl. (Riukiu Isl. Kuroiwa); Ogasawara-jima (abundant pieces obtained from the stomach of *Chelonia viridis* T. et S.).

Hitherto-known: In the Pacific at Samoa Isl., Sandwich Isl., Basilan Isl. and Sulu Isl. In Indian Ocean at Mauritius Isl. and Madagascar Isl. At Dar es Salaam on the east coast of Africa.

The locality mentioned above is the northern-most limit known of the distribution of this alga in the North Pacific Ocean.

Plate XXV. **Fig. 1:** sterile frond of *Amansia glomerata*, $\frac{2}{1}$.—**Fig. 2:** portion of lamina showing rosette-like proliferations and thickening of the midrib, $\frac{5}{1}$.—**Fig. 3:** portion of the middle one of three rosettes in Fig. 2, to show the younger proliferations, $\frac{5.2}{1}$.—**Fig. 4:** young plantlet producing roots from the lower end of midrib, $\frac{1}{1}$.—**Fig. 5:** adventitious growth of creeping branches from marginal portion of lamina, $\frac{1.2}{1}$.—**Fig. 6:** portion of surface of lamina showing zonal arrangement of cells on both sides of the midrib, $\frac{2.2.0}{1}$.—**Fig. 7:** portion of the cross-section of lamina showing the midrib and 5 pericentral cells; *v*, the ventral, *d*, the dorsal side, $\frac{2.2.0}{1}$.—**Fig. 8:** the same showing the formation of cortical cells on the ventral side of the midrib, $\frac{2.2.0}{1}$.—**Fig. 9:** cross-section of thick midrib, $\frac{1.8}{1}$.—**Fig. 10:** apical portion of

lamina seen from the ventral side showing a longitudinal row of hair-leaves on the dorsal side, $\frac{220}{1}$.—**Fig. 11**: tetrasporic pinnulæ seen from the ventral side, $\frac{18}{1}$.—**Fig. 12**: portion of the same seen from the ventral side to show 2 “cover-cells, $\frac{220}{1}$.—**Fig. 13**: portion of the same seen from the dorsal side, $\frac{220}{1}$.

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Amansia glomerata Ag.

きくひをとし (岡村命)

ふぢまつも科

Amansia glomerata Ag. Syst. p. 247; J. Ag. Symb. p. 25; Id. Sp. Alg., Vol. II, p. 1111; Kütz. Sp. Alg. p. 883; Fkbg. Rhodom. p. 416, Taf. I, fig. 19-21; Taf. VI, fig. 14-29.—*Amansia fasciculata* Kütz. Tab. Phyc., Vol. XV, Taf. 4, a-d.—*Delesseria rhodantha* Harv. Alg. Telfair. no. 9 in Hook. Journ. of Bot. p. 147 tab. CXXVI.—*Amansia rhodantha* J. Ag. Symb. p. 26.—乾燥標品 Harv. Friendl. Isl. Alg. no. 9.

附着器ハ圓盤狀。體ハ密ニ團集セル叢ヲナシ、3-7 cm. 高シ。其始メ、體ハ薄キ膜質ノ披針狀ヲナシ、成長端ヲ腹面ノ方ニ卷曲シ、兩縁ニ沿フテ小サキ羽狀ノ枝ヲ生ジ、腹面ノ中肋ヨリ始原ノ體ト同様ノ枝ヲ副出ス。副出シタル部分ハ花形ニ叢生シ、其充分伸長シタル後、更ニ前ト同様ニ又他ノ花形ノ枝ヲ副出ス。斯クシテ始メ單條ナル體ハ漸ク複雑ナルニ至ル。中肋ハ副枝ヲ出ササル葉片ニハ不明ナレドモ、其中肋ノ或部分ヨリ副枝ヲ生ズルトキハ、其生シタル部分ヨリ葉片ノ下部ニ至ル迄ノ間ノ中肋ノ兩面ニ、漸々皮層細胞ヲ形成スルガ爲ニ、中肋ハ甚シク太クナリテ隆起ス。此様ニシテ、始

原ノ體ノ下部ハ漸々太ク成リ、其兩翼ノ消滅スルニ至レバ、中肋ハ變ジテ莖トナリ、莖ハ一定ノ規則ナク分枝スルニ至ル。各部ノ形狀及ビ他ノ性質ハ皆同一ナリ。各部ハ披針狀ニシテ、頂端ハ腹面ノ方ニ卷キ、縁邊ニ小サキ羽枝ヲ生ズルモノ恰モ鋸齒ノ如ク見ユ。羽枝ハ內長法ニテ起リ、腹面ノ方ニ卷キ、其縁邊ニ更ニ同様ナル小羽枝ヲ有ス。羽枝ハ多クハ短キ儘ニシテ止マレドモ、時トシテハ他ノ部ト同様ノ部分ニ成長ス。是ニ依テ、體ノ分枝法ハ二様ナリトス；其一ハ羽枝ノ伸長ニヨリ、其二ハ花形ノ副枝ニ依ル。余ハ多數ノ標品ノ内ニ、一個ノ老成シタル葉片ノ縁部ヨリ、根ノ如キ枝ヲ生ジタルモノアルヲ見タリ(第五圖)。又一ノ葉片ノ中肋ノ下端ヨリ枝狀根ヲ出シテ、一個體ノ植物トナレルモノアルヲ見タリ(第四圖)。此等ノ事實ニ依テ考フルニ、此海藻ハ其部分ヲ以テ他物ニ附着スベク且ツ營養體ノ分殖ヲ爲スモノ、如シ。

葉片ハ太キ中肋ノ外ハ全ク皮層細胞ヲ被ムルコトナク、細長キ六角形ノ細胞ノ二層ヨリ成ル；此細胞ハ水平ニ並列シ、中肋ノ兩側ニ配置セラレテ、對ヲナセル周心細胞ヨリ分裂シテ生ジタルモノナリ。葉片ノ細胞ノ高サハ $72-120\mu$ アリテ、其横ニ並列セル數ハ凡ソ百五十許リアリ。葉片ノ背面ノ中央線ニ沿フテ、早落スベキ毛狀枝ノ一縱列アリ；毛狀枝ハ屢叉狀ニ分ル。莖又ハ枝ノ如キ厚ク皮層ヲ被ムレル部分ニテモ其元來ノ葉片ハ常ニ之ヲ認ムルヲ得。

四分孢子囊ハ少シク變形シタル小羽枝ニ形成セラレ、其腹面ニ沿フテ二列ヲナシ、二個ノ蓋細胞ヲ以テ蔽ハル。四分孢子囊ヲ生ズル小羽枝ハ披針狀ニシテ、單條又ハ少シク分枝

シ、通常其毛狀枝ハ不完全ノ發育ヲナス。精子器及ビ嚢果ハ余今之ヲ詳ニセズ。色ハ美シキ薔薇紅色。葉片ノ質ハ薄キ膜質ニシテ、莖及ビ中肋ノ質ハ軟骨質ナリ。體ハ乾燥スルトキハ紙ニ附着セズ。

產地。琉球沖繩島(黒岩氏);小笠原島(あをうみがめノ胃中ヨリ多量ニ片々ヲ得タリ)。

既知產地。太平洋中サモア島、布哇、バジラン島及ビスールー島。印度洋中モーリシヤス島及ビマダガスカル島。亞弗利加ノ東岸ダーレスサラーム。

本產地ハ北太平洋ニ於ケル此海藻ノ分布ノ最北地ナリ。

第二十五圖版 第一圖: きくひをどしノ實ナキ體, $\frac{2}{1}$ 。—**第二圖:** 花形ノ副枝ト中肋ノ太クナリタルトヲ示ス, $\frac{5}{1}$ 。—**第三圖:** 第二圖ノ三個ノ花形副枝ノ真中ノモノヲ廓大シテ其幼キ副枝ヲ示ス, $\frac{5.2}{1}$ 。—**第四圖:** 中肋ノ下端ヨリ根ヲ出シタル幼キ植物, $\frac{1}{1}$ 。—**第五圖:** 葉片ノ縁部ヨリ匍枝ヲ生シタルモノ, $\frac{1.2}{1}$ 。—**第六圖:** 中肋ノ左右ニ横列セル細胞ヲ表面ヨリ見タルモノノ一部, $\frac{2.2.0}{1}$ 。—**第七圖:** 葉片ノ横斷面ノ一部ニシテ中肋ト五條ノ周心管トヲ示ス; v ハ腹面, d ハ背面ヲ示ス, $\frac{2.2.0}{1}$ 。—**第八圖:** 同様ノ部分ニシテ, 中肋ノ腹面ニ皮層細胞ノ形成スル狀, $\frac{2.2.0}{1}$ 。—**第九圖:** 太キ中肋ノ横斷面, $\frac{1.8}{1}$ 。—**第十圖:** 腹面ヨリ見タル葉片ノ頂部ニシテ其背面ニ毛狀枝ノ縦列スルヲ示ス, $\frac{2.2.0}{1}$ 。—**第十一圖:** 四分孢子囊ヲ有スル小羽枝ヲ腹面ヨリ見タルモノ, $\frac{1.8}{1}$ 。—**第十二圖:** 同上ノ一部ヲ腹面ヨリ見テ二個ノ蓋細胞ヲ示ス, $\frac{2.2.0}{1}$ 。—**第十三圖:** 同上ノ一部ヲ其背面ヨリ見タルモノ, $\frac{2.2.0}{1}$ 。



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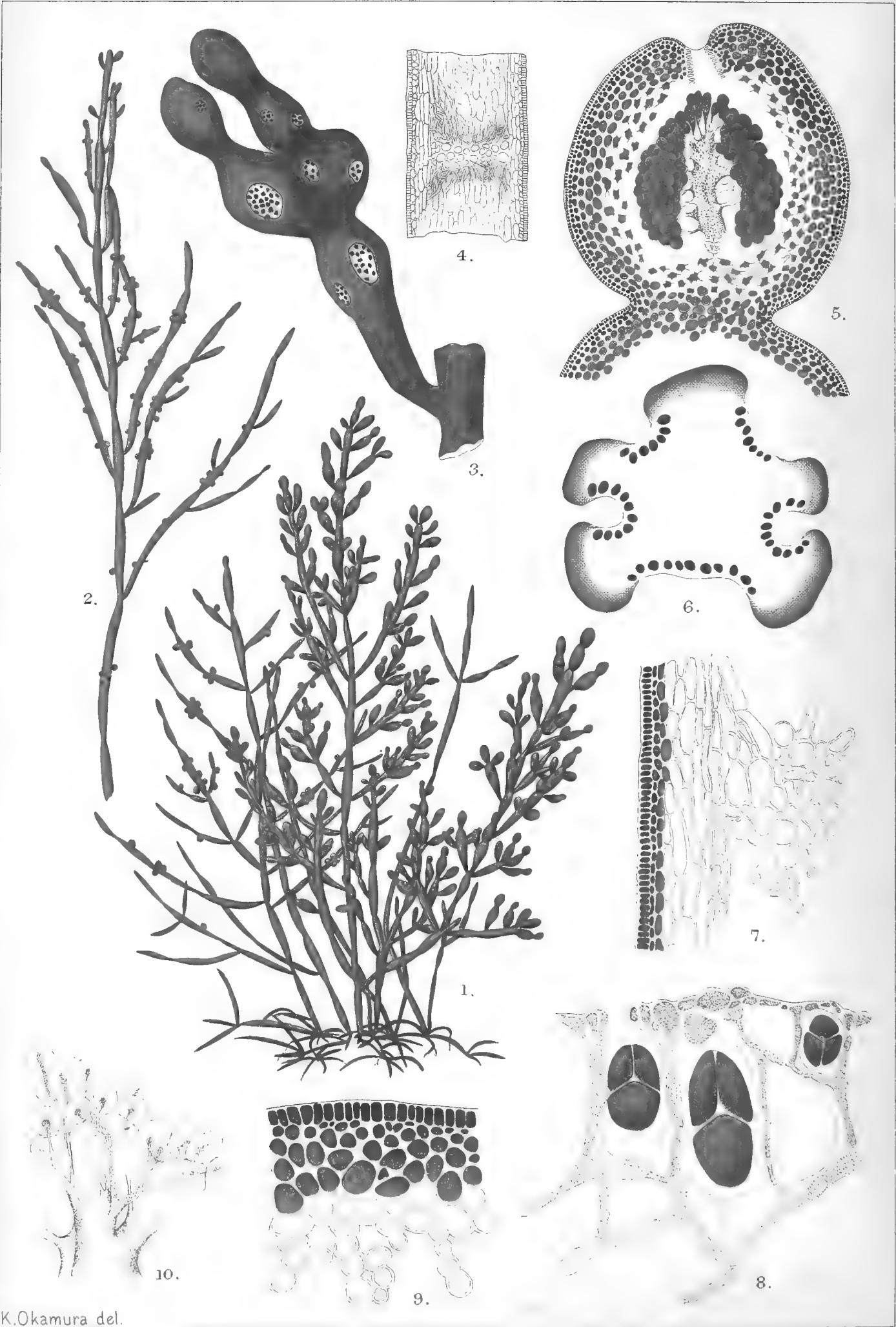
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K.Okamura del.

Lomentaria catenata Harv.

PLATE XXVI.

Lomentaria catenata Harv.

RHODYMENIACEÆ.

Nom. Jap.: *Fushi-tsunagi*.

Lomentaria catenata Harv. in Gray List of plants coll. in Japan, p. 331; J. Ag. Epicr., p. 635; De Toni Phyc. Jap., (1895), p. 28, no. 60; Id. Syll. Alg. Vol. III. p. 555; Okam. Alg. Jap. Exsic. Facs. I, no. 15.—*Chylocladia catenata* J. Ag. Epicr., p. 303 (nomen).

Plant is dendritic, forming a large, dense and roundish tuft, and rises from matted surculus. Frond is stipitate, erect, cylindrical and tubular, 2–3 times pinnately branched and is 6–18 cm. high, attaining 1–1.5 mm. in diameter. Stem is percurrent, slightly narrowed at base, and is constricted into joints at various distances. Branches of every order are opposite or verticillate, but not without some irregularly inserted ones. The lower branches are usually longer than the upper, and their lengths become shorter and shorter upwards, and, as the consequence, the plant assumes pyramidal outline. All the branches and branchlets are very patent or almost horizontal, especially in lower branches, standing on rounded axils, and arise from neighborhood of node or from internodes where segments widen out in some measures. Their bases are somewhat narrowed and their apices are blunt. Lengths of articulations are longer in the lower portion of stem and larger branches, becoming gradually shorter upwards. Upper portions of branches are catenato-constricted with fusiform or ellipsoidal segments, especially so in tetrasporic fronds.

Cystocarpic fronds are sometimes similar in shape to tetrasporic ones, but in other cases, their branches are much more elongated, often appearing to unaccustomed eyes to be entirely different from the typical plant.

The innermost layer of the wall of frond is composed of loosely set and longitudinally running filaments to which so-called gland-cells are wanting. Outside of this layer is occupied by a thick layer, composed of internally larger and externally smaller cells, which is covered by a layer of anticlinal, cortical cells. At constricted places, there are transverse septa which are composed of an aggregation of irregularly arranged roundish and elongated cells. These septa divide the tube into various compartments and are connected with the inner wall of the intermediate layer by filamentous cells. There are no longitudinally running filaments which unite septa to each other, as it is the case with *Champia*.

Tetrasporangia are densely aggregated into roundish sori which are scattered over segments of ramuli and sink beneath the surface of frond, forming roundish depressions. They are developed from cortical cells and bulge in towards the cavity of frond. They are surrounded by a beautiful network of infracortical cells which become filamentous there. They are roundish or elongated and are triangularly divided.

Cystocarps are globular, and sessile, and single or 3-4 or more are aggregated at the sides of branches and branchlets. Pericarp is thickly cellular and is composed of two layers of cells. The inner layer is composed of a few stellate and anastomosing cells, and the outer, of roundish ones which are arranged in anticlinal rows. Neucleus is simple and globular, being made of spore-filaments which are densely branching in paniculate manner from a large pedicel-cell. The central cell, on

which the pedicel-cell stands, is small and sustained below by a stratum of stellate cells which form the bottom of spore-cavity and the inner anastomosing layer of pericarp. Gonimolobes are successively formed. Spores are almost simultaneously developed in all the articulations of spore-filaments and are densely aggregated without any conspicuous order. A large carpostome is opened on the apex of the pericarp.

Colour dull red, fading to greenish on standing long in water. Substance cartilaginous and the plant rather imperfectly adheres to paper in drying.

Hab. On rocks between tide marks, often in tide-pools and sheltered places. Tosa, Shima, Isls. Kōzu-shima and Ōshima (Prov. Izu), Shimoda (Prov. Izu), Sagami, Bōshū, Kazusa. Fruits—late in Spring.

In De Toni's Syll. Alg. l. c., the present species is put under "Species incertæ;" but it is beyond any doubt that it is a distinct species related to *Lomentaria articulata* (Huds.) Lyngb. From the latter, however, the present plant differs in consistence, mode of ramification and length of articulations.

Plate XXVI. **Fig. 1:** a few of fructified fronds of *Lomentaria catenata* Harv., $\frac{1}{1}$; for the sake of convenience, tetrasporic and cystocarpic fronds shown as if to grow in one and the same tuft.—**Fig. 2:** portion of elongated frond bearing cystocarps, $\frac{1}{1}$.—**Fig. 3:** portion of ramuli, showing tetrasporic sori, $\frac{7}{1}$.—**Fig. 4:** longitudinal section of frond, showing dissepiment, slightly magd.—**Fig. 5:** longitudinal section of cystocarp, $\frac{3.5}{1}$.—

Fig. 6: cross-section of tetrasporic ramulus, showing sori, $\frac{30}{1}$.—

Fig. 7: portion of the wall of frond and dissepiment, $\frac{85}{1}$.—

Fig. 8: tetrasporangia, $\frac{220}{1}$.—**Fig. 9:** portion of the cross-section of frond, $\frac{220}{1}$.—**Fig. 10:** paniculate branching of pedicel-cell, $\frac{220}{1}$.

第二十六圖版

Lomentaria Lyngbye.

ふしつなぎ屬

だるす科

性質. 體ハ圓柱狀又ハ僅ニ扁圓, 全長中空, 又ハ所々, 細胞組織ヨリ成レル隔障ヲ以テ, 結節ノ如クビレ, 時トシテハ下部中實ニシテ, 枝ハ中空ヲナシ, 結節ヲ存ス; 多クハ側面ヨリ種々ニ分枝シ, 細胞組織ヨリ成ル: 髓層ハ細クシテ縱走分枝セル絲狀細胞ノ束ヨリ成リ, 中空ナル體ノ部分ニアリテハ, 互ニ弛緩シテ體ノ内壁ニ接シ, 小サキ腺細胞ヲ存ス; 皮層ハ密ナル組織ニ結合シ, 多クハ可ナリ薄ク, 中空ナル部分ニアリテハ密ナル體壁ノ組織ヲナス; 此層ハ稍大ナル細胞ノ一層又ハ數層ヨリ成リ, 一層又ハ數層ノ小ナル皮層細胞ヲ以テ成ル. **四分孢子囊**ハ群ヲナシテ集リ, 多少體ノ内方ニ凹ミタル, 特殊ノ體面ノ部分ニ形成セラレ, 體腔ノ方ニ突出シ, 三角錐形ニ分裂ス. **囊果**ハ散在シ, 體ノ外部ニ膨起ス. 果腔ハ仁ノ周圍ニ充滿スル填充組織ヲ存スルコトナク, 或ハ時トシテ, 僅ニ填充組織ノ痕跡ヲ存ス. 仁ハ成胞絲又ハ成胞裂絲ヨリナリ, 孢子絲ハ大ナル仁柄細胞ヨリ複總狀ニ分枝シ, 其各關節ニ孢子ヲ形成ス; 成胞裂絲ハ順次ニ形成セラル.

二三ノ種類ヲ含ミ, 溫キ海ニ産ス. 以下示ス所ノ種類ハ邦内最モ普通ノモノナリ.

Lomentaria catenata Harv.

ふしつなぎ 新稱

Lomentaria catenata Harv. in Gray List of Plants coll. in Japan, p. 331; J. Ag. Epicr., p. 635; De Toni, Phyc. jap., (1895) p. 28, no. 60; Id. Syll. Alg. Vol. III, p. 555; 岡村, 日本海藻標品, 第一帙, 第十五; 岡村 日本藻類名彙, 43 頁.—*Chylocladia catenata* J. Ag. Epicr., p. 303 (名ノミ,)

體ハ樹狀ニシテ, 大ナル圓キ密ナル束ヲ成シ, 錯綜セル匐枝ヨリ直立ス; 有莖ニシテ, 圓柱狀, 中空ナリ, 二三回羽狀ニ分枝シ, 6-18 cm. 高ク, 徑 1-1.5 mm. ヲ有ス. 莖ハ上端マデ貫通シ, 基部少シク細ク, 種々ノ距離ニ於テ結節ヲナシテクビレル. 枝ハ對生又ハ輪生スレトモ, 不規則ニ出ルモノナシトセズ. 下部ノ枝ハ通常上部ノモノヨリ長ク, 漸々上方ニ短シ, 故ヲ以テ, 體ハ三角錐形ヲナス. 枝及ビ小枝ハ總テ甚シク廣開シ, 或ハ水平ニ出デ, 殊ニ下部ノ枝ヲ以テ然リトス; 枝ハ腋圓クシテ節部又ハ節間部ヨリ出デ, 其部ハ幾分カ廣ガレリ. 枝ノ基部ハ稍細クナリ頂端ハ鈍頭ナリ. 關節ノ長サハ莖ノ下部及ビ大ナル枝ニ於テハ長クシテ, 漸次上方ニ短シ. 枝ノ上部ハ連鎖狀ニクビレ, 節間ハ紡錘狀又ハ橢圓狀ヲナシ, 殊ニ四分孢子ヲ有スル體ニ於テ然リトス. 囊果ヲ有スル體ハ, 時トシテハ, 四分孢子ヲ有スル體ト同形ヲナシ, 又ハ其枝ハ長ク伸長シテ, 慣レザル眼ニハ, 全ク規範的體形ト異ナレル如キ觀ヲ呈ス

體壁ノ最内層ハ緩ク置カレタル縱走セル, 絲ヨリ成リ, 此

絲ニハ所謂腺細胞ヲ缺ク。此層ノ外部ハ厚キ層ヨリ成リ、其層ノ細胞ハ内方ニハ大ニシテ、外方ニハ小ナリ、而シテ表面ニ直角ニ配置セル、皮層細胞ノ一層ヲ以テ蔽ハル。結節部ニ於テハ、横ニ置カレタル隔障ヲ有シ、隔障ハ不規則ニ配置セル圓キ及ビ長キ細胞ノ集リヨリ成ル。此等隔障ハ體腔ヲ數多ノ室ニ分チ、絲狀細胞ニ依テ、體壁ノ中層ノ内壁ト連絡ス。わつなぎさうニ見ル如キ、隔障ヲ互ニ結合スル所ノ、縦走セル絲狀細胞ナシ。

四分孢子囊ハ圓形ノ群ヲナシテ密集シ、其群ハ小枝ノ節間部ニ散在シ體ノ表面下ニ凹ム。四分孢子囊ハ皮層細胞ヨリ生ジ、體ノ内腔ノ方ニ膨出ス；而シテ此所ニハ、皮下層細胞ハ美シキ網狀ヲナシテ孢子ヲ圍繞ス。孢子ハ圓ク又ハ長メニシテ三角錐形ニ分裂ス。

囊果ハ球狀ニシテ無柄、單獨、又ハ3-4或ハ尙ホ多ク集リ、枝及ビ小枝ノ側面ニ付着ス。果皮ハ厚キ細胞組織ヨリ成リ、二層ヲ以テ成ル；内層ハ星狀ニシテ、網狀ヲナセル少數ノ細胞ヨリ成リ、外層ハ圓キ細胞ヨリ成リテ表面ニ垂直ナル列ヲナス。仁ハ單體ニシテ球狀ヲナシ、大ナル仁柄細胞ヨリ、複總狀ニ密ニ分枝セル孢子絲ヨリ成ル。仁柄細胞ハ、小ナル中心細胞ノ上ニ立ち、其下部ハ一層ノ星狀細胞ヲ以テ支ヘラル；此星狀細胞ハ果腔ノ内底ヲ作り、果皮ノ内層ヲナスモノナリ。成胞裂絲ハ順次ニ形成セラレ、孢子ハ殆ド同時ニ孢子絲ノ各關節ニ於テ形成セラレ、一定ノ順序ナク密集ス。果皮ノ頂端ニ大ナル一ノ果孔ヲ開ク。

色ハ暗紅色ニシテ、永ク水中ニアルトキハ綠色トナル。

質ハ軟骨質ニシテ, 乾燥スルトキハ紙ニ付着スルコト充分ナラズ.

產地. 潮線間ノ岩石ニ生ジ, 往々潮溜リ及ビ蔭ニナリタル場所ニ産ス. 土佐, 志摩, 神津島及大島(伊豆), 下田(伊豆), 相模, 安房, 上總. 果實一晚春.

上記 De Toni 氏 Syll. Alg. ニハ本種ハ“不明ノ種類”中ニ置カレタレドモ, 其 *Lomentaria articulata* (Huds.) Lyngb. ト親縁ヲ有スル種類ナルコトハ疑ヲ容レズ, 而シテ此種ト異ナル點ハ體質, 分枝法及ビ節間ノ長サニアリトス.

第二十六圖版

第一圖: ふしつなぎノ實ヲ有スル體ニシテ, 甚シク他ノ體ヲ除去セリ, $\frac{1}{1}$; 而シテ便宜上, 四分胞子ヲ有スルモノト囊果ヲ有スルモノトヲ同一ノ叢ヲナセル如ク示シタリ.

第二圖: 囊果ヲ有スル體ノ部分ノ伸長シタルモノ; $\frac{1}{1}$.

第三圖: 四分胞子群ヲ有スル小枝ノ一部; $\frac{7}{1}$.

第四圖: 體ノ縱斷面ニシテ隔障ヲ示ス; 郭大.

第五圖: 囊果ノ縱斷面; $\frac{35}{1}$.

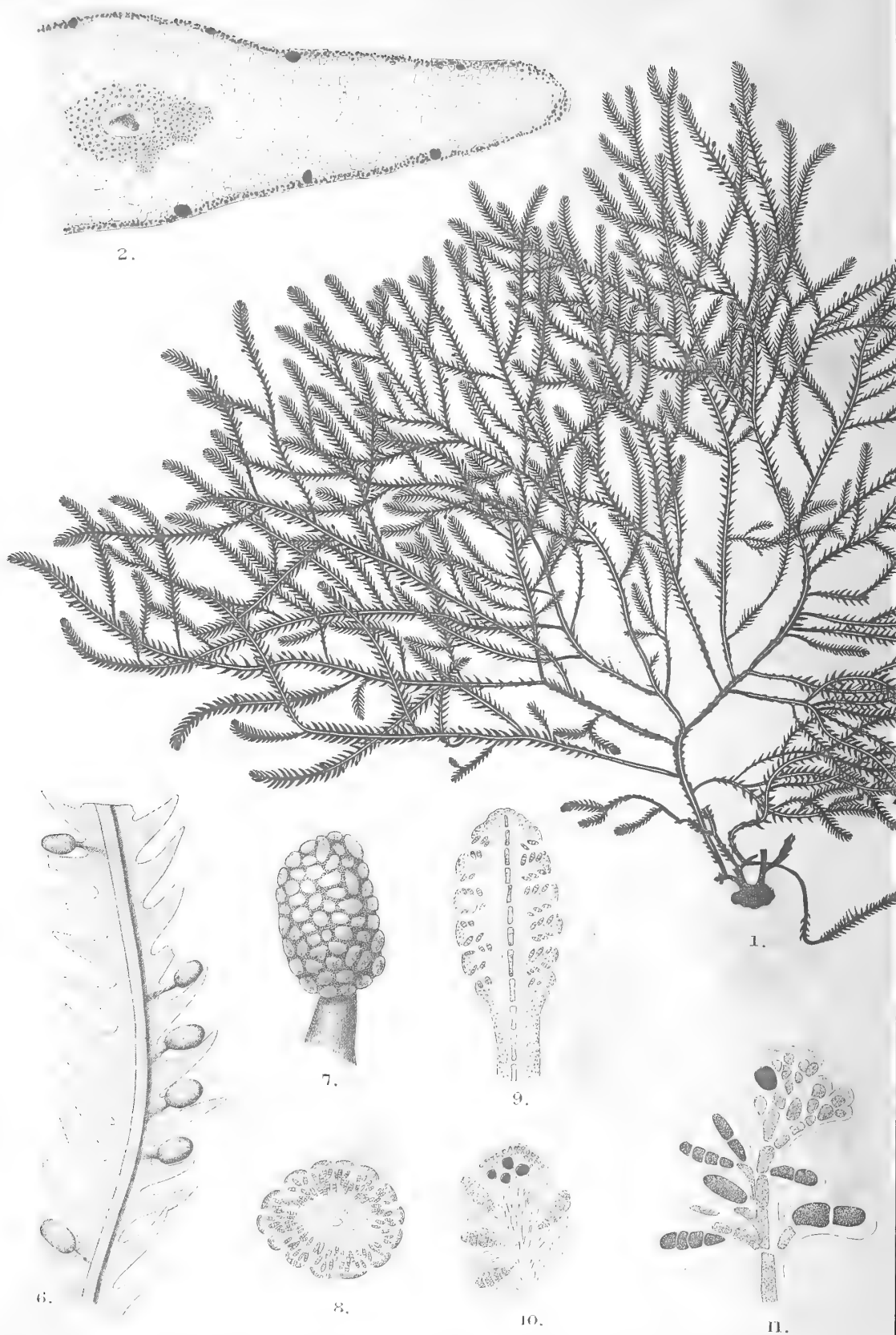
第六圖: 四分胞子囊ヲ有スル小枝ノ橫斷面ニシテ, 群ヲ示ス; $\frac{30}{1}$.

第七圖: 體壁ト隔障トノ一部; $\frac{85}{1}$.

第八圖: 四分胞子囊; $\frac{220}{1}$.

第九圖: 體ノ橫斷面ノ一部; $\frac{220}{1}$.

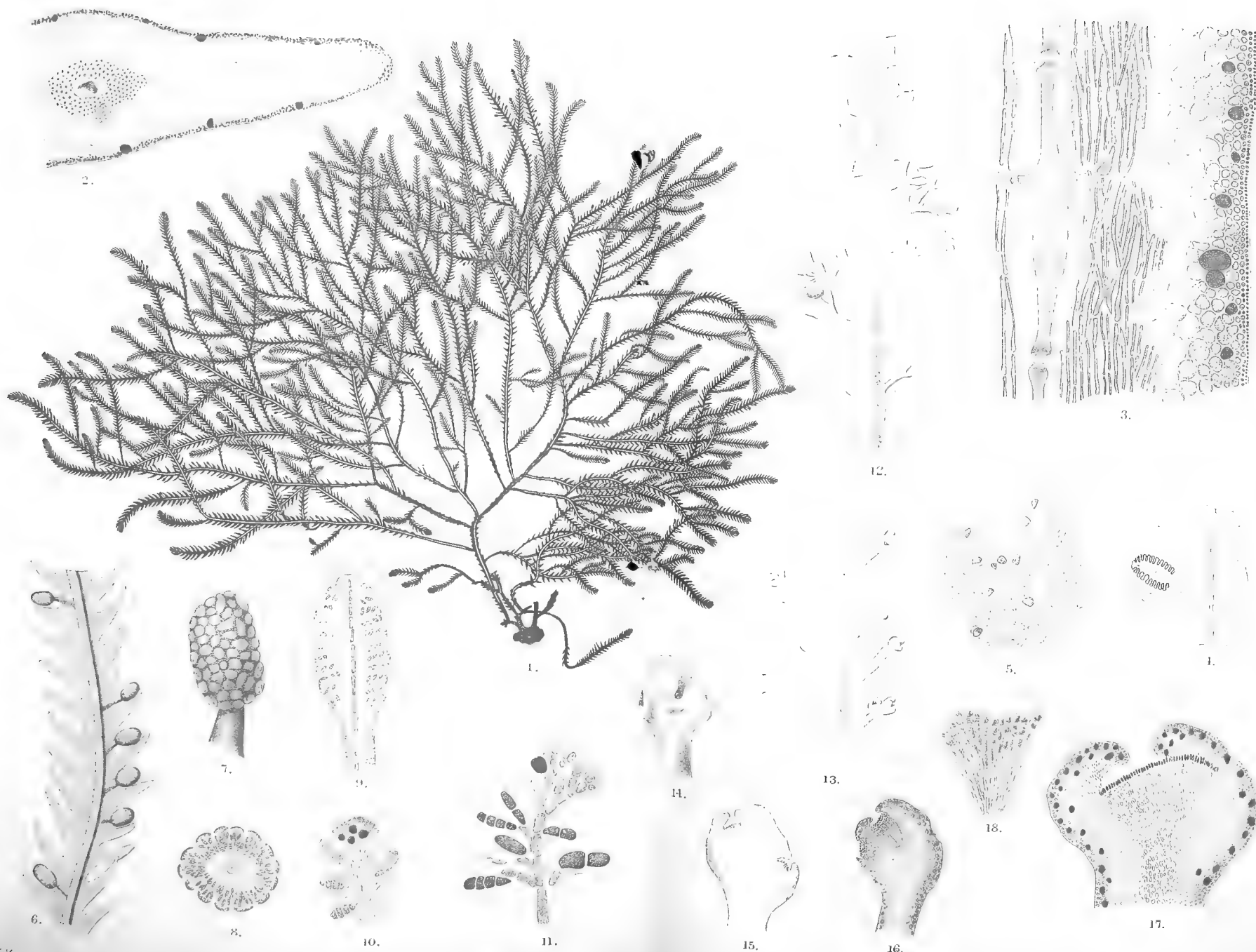
第十圖: 仁柄細胞ノ複總狀ニ分枝スル狀; $\frac{220}{1}$.



K.O Kamura del.

Phacelocarpus





K. Okamura del.

Phacelocarpus japonicus Okam. nov. sp.
 新種のヒメノミ



PLATE XXVII.

Phacelocarpus japonicus sp. nov.

SPHÆROCOCCACEÆ.

Nom. Jap. *Kiji-no-wo*.

Diagn: Fronds cœspitose, rising from a circular disc, copiously branched almost from the base in distichous manner, membranaceous, ancipito-compressed above, subcylindrical in older parts, faintly midribbed, narrowly winged and pectinato-pinnatifid with broadly subulate or deltoid, patent laciniaë, whose lengths are shorter below, subequal to or a little longer above than the breadth of rachis. Fruits of both kinds axillary and stipitate. Tetrasporic receptacles elongato-ovoid, shortly pedicellate. Cystocarps flattish-globular or reniform with a furrow-like opening on the summit.

Hab. In deep waters. Ise, Shima, Sagami, Kazusa, Hitachi, Iwaki. Fruits—Summar.

Fronds arise solitary or a few together from a broad scutate and circular disc which is 5–8 mm. broad, and branch copiously almost from the base. The mode of ramification is distichous and the plant attains 15–20 cm or more in height. Branches are irregularly decompose in alternate manner, intermixed with longer and shorter ones, erecto-patent, and furnished with acute axils. The lower portion of frond as well as of larger branches is, in older specimens, subcylindrical by the decaying off of lateral teeth; but other part of frond is pectinato-pinnatifid with

broadly subulate or rather deltoid, flat laciniae. They are mostly spreading and alternate, and are, as a rule, a little longer than the broadly linear portion i. e. rachis of frond. Those on the upper branches are incurved and longer than the breadth of rachis, while on the basal portion of all branches they are shorter, deltoid and patent, giving subserrate appearance to the rachis. The longer laciniae are about $\frac{1}{3}$ longer than the breadth of rachis. Branches are furnished with the slightly prominent midrib, and the wings are broader on the upper than on the lower portion of branches.

The central portion of frond is occupied by an axis, composed of thick, cylindrical cells. From a portion a little higher than the middle point of each axial cell, four branches arise in verticillate manner. Of these, two shorter ones are directed towards surfaces and they are soon lost becoming indistinguishable from rhizoidal filaments which densely surround the central axis. One of the other two reaches the apex of lacinia, while the remaining one reaches the axil of laciniae. The latter may give rise to normal branch, and in fructified frond, fertile ramulus develops from it. Around the axis there is a more or less thick layer of longitudinally running rhizoids which branch dichotomously and anastomose to each other. The rhizoidal layer is again covered by a thick intermediate layer of which the inner cells are larger and roundish. They become gradually smaller outwards and are finally covered by a few layers of cortical cells. Some of larger cells near the surface are filled with orange-coloured contents.

Mode of growth of the frond is terminal, with a large apical cell which is horizontally or slightly obliquely jointed. The successive cells just beneath the apical cell soon give rise to alternate and incurved laciniae which elongate by division of

their own terminal cells. From axils of laciniae, the apices of young ramuli, either sterile or fertile, make their appearance.

Cystocarps and tetrasporic receptacles are axillary and pedicellate. Their total lengths (including pedicels) are usually same as those of laciniae. Receptacles of tetrasporangia are oval, containing numerous cavities excavated under the surface-coating. The wall of this cavity is composed of loose, moniliform filaments, among which elongated, clavate or oblong tetrasporangia, divided in zonate manner, are situated.

Procarys are unknown to me. Cystocarps are formed solitary or often two together, inserted obliquely beneath the apices of fertile ramuli, and are sometimes accompanied by abortive laciniae. The form of cystocarps is irregularly roundish and more or less reniform being slightly appressed in the same plane with the surface of frond. Each is furnished with a more or less gaping slit-like opening which runs on the summit in the direction of the longer axis. Placenta is laterally appressed on the plane parallel to the flattish side of cystocarp and neucleus is laterally flattened by the closely lying flaps of thick pericarp. Placenta is composed of numerous and several times forked spore-filaments which are densely packed together. The terminal cells of these tufted spore-filaments which form the vaulted surface of placenta are transformed into globular or elongated spores. Neucleus is mostly single, but another smaller isolated one is formed in the same cystocarp. In some specimens, fertile ramuli become abortive and develop into irregularly branched ramuli. They are mostly destitute of laciniae, but sometimes a few of them are formed on those ramuli and even cystocarps are thus developed.

Colour, when alive, is deep red, changing, after long immersion in water or exposure to air, to beautiful red and then orange. Substance is thin and membranaceous except thickened midrib

and stem which have cartilaginous consistence. In drying, the frond does not adhere to paper.

Phacelocarpus japonicus may be placed in the subgenus *Euctenodus* (Kg). *Ŷ. Ag.* in the neighborhood of *Ph. Labillardieri*. On comparing the former plant with the latter, it differs in several points, viz: by smaller statue of frond, by thinner and softer substance, by less thickened midrib, by broaderness of wing of branches, by shortness and more distant arrangement of laciniaë. The length of longer laciniaë is, as stated before, about $\frac{1}{3}$ longer than the breadth of rachis; and even in well-developed ones, their bases are somewhat broader than the base of laciniaë of *Phacelocarpus Labillardieri*. Lastly, the laciniaë are more widely separated and are much more spread than in the latter species.

In the point of its having broader wings of frond, the present plant resembles *Phacelocarpus alatus Harv*; but the latter plant differs in having pedicels of the both kinds of fruits transformed from laciniaë. Both *Phacelocarpus apodus Ŷ. Ag.* and *Ph. sessilis Harv.* differs from the plant in question in having more slender and subulate laciniaë and the former species, moreover, in having verrucose cystocarps. *Phacelocarpus epipolæus Holm.* resembles to the present plant in the form, length and arrangement of laciniaë, but it differs in having thickened rachis and externally invisible midrib as well as in the mode of ramification.

Plate XXVII.—**Fig. 1:** frond of *Phacelocarpus japonicus Okam.* bearing tetrasporic receptacles, $\frac{1}{1}$.—**Fig. 2:** cross-section of frond, moderately magd.—**Fig. 3:** longitudinal section of

frond cutting perpendicular to the surface, showing the shorter branches from the central axis, $\frac{220}{1}$.—**Fig. 4**: optical tangential section of frond, showing the longer branches from the central axis, $\frac{14}{1}$.—**Fig. 5**: surface view of the apical portion of frond, $\frac{390}{1}$.—**Fig. 6**: portion of branch bearing receptacles of tetrasporangia, $\frac{10}{1}$.—**Fig. 7**: receptacle of tetrasporangia in surface view, $\frac{50}{1}$.—**Fig. 8**: cross-section of the same, $\frac{50}{1}$.—**Fig. 9**: longitudinal section of the same, moderately magd.—**Fig. 10**: portion of the same as fig. 9, $\frac{220}{1}$.—**Fig. 11**: formation of tetrasporangia, $\frac{684}{1}$.—**Fig. 12**: anomalous growth of fertile ramuli, $\frac{7}{1}$.—**Fig. 13**: portion of branch bearing cystocarps, slightly magd.—**Fig. 14**: cystocarps viewed from flat surface, $\frac{50}{1}$.—**Fig. 15, 16**: longitudinal section of cystocarps cutting perpendicular to the flat surface, showing two nuclei, $\frac{50}{1}$.—**Fig. 17**: longitudinal section of a cystocarp cutting in the same plane as fig. 15, $\frac{85}{1}$.—**Fig. 18**: spore-filaments, $\frac{390}{1}$.

第二十七圖版

Phacelocarpus Endlicher et Diesing.

きじのを屬

たまみ科

性質. 體ハ圓柱狀,又ハ扁平ニシテ兩縁ニ薄ク,圓柱狀ノモノハ各方面ヨリ短カキ刺狀小枝ヲ互生シ,扁平ノモノハ兩側ヨリ櫛齒狀ノ小枝ヲ互生ス;又狀又ハ羽狀ニ分枝シ,絲ト細胞トヨリ成ル:中軸ハ可ナリ太キ横ニ關節セル細胞ヨリ成リ,輪生様ニ出タル枝ヲ有ス(此枝ハ各方面ニ互生シ又ハ二方面ニ互生ス);中軸ノ周圍ニハ密ニ之ヲ圍ム所ノ根絲細胞アリテ,其細胞ハ細クシテ縱走ス;内皮部ハ厚キ層ヲナシ,其内方ノ細胞ハ大ニシテ漸次外部ニ小サク;外皮ハ小細胞ニシテ,表面ニ直角ヲナシ,層ヲナスコト明ナラズ.成長點細胞ハ水平ニ又ハ時トシテハ斜ニ關節ス.四分孢子囊及ビ囊果ハ特ニ變形シタル短カキ小枝ニ形成セラル.四分孢子囊ハ環狀ニ分裂シ,特殊ノ小枝ノ頂端ニ根棒狀ニ膨大セル部分ニ生ズ;此部分ハ多數ノ窠ヲ有シ此窠ハ外部ニ開孔ス,而シテ此窠ノ周圍ノ壁ニ孢子囊ヲ生ジ,密集ス.囊果ハ明ニ柄ヲ有シ,體ノ側面ニ出デ,不規則ナル球狀ヲナシ,又ハ瘤狀ヲナシ,或ハ畧ボ臂臟形ニ扁クナレリ;果皮ハ甚ダ厚クシテ,果孔ハ横ニ開キ,或ハ頂部ノ曲線ニ沿フテ走レル裂罅ノ如キ口ヲ以テ開キ,時トシテハ不規則ニ且ツ多少ノ口ヲ開キ

タル如キ孔ヲ以テ開ク。仁ハ果孔ノ形狀ニ隨テ、厚キ果皮ガ側面ヨリ密ニ壓迫スルガ爲ニ扁クナリ、爲ニ種々ノ形狀ヲナス；而シテ胎座ハ多數ノ根絲細胞ノ密ニ錯綜セルモノヨリ成リ、一ノ中心細胞ト稱スルモノヲ以テ周圍ノ組織ト付着ス；此中心細胞ハ可ナリ小ニシテ上方ニ分枝ス。孢子絲ハ多數ノ屢々分叉セル細長キ細胞ヨリ成リテ密集シ、此絲ノ頂端ノ並列セル表面ノ部分ニ於テ、其頂端ノ細胞ヨリ、同時ニ孢子ヲ形成ス；時トシテハ同一ノ囊果中ニ於テ、又別離セル仁ヲ有スルコトアリ。

本屬ノ植物ハ凡ソ八種アリテ、南アフリカ及南部オーストラリアニ産ス。本邦ニハ左ノ一種アルノミ。

Phacelocarpus japonicus Okam. sp. nov.

きじのを 新種

Phacelocarpus japonicus 岡村日本藻類名彙 275 頁。

性質。體ハ叢生シ、圓盤狀付着器ヲ以テ直立シ、體ノ殆ド基部ヨリ夥シク密ニ兩縁ヨリ分枝シ、膜質ニシテ、上部扁壓、老成部ハ稍圓柱狀ヲナシ、兩縁ニ薄ク、細キ中肋ヲ存シ、狭キ翼ヲ備ヘ、櫛齒狀ニ細羽狀裂片ヲ有ス；裂片ハ細長クシテ基部稍廣ク、上端尖リ或ハ稍三角形ヲナシ、廣開ス；其長サハ枝ノ下部ニテハ枝ノ幅ヨリモ短ク、或ハ之ト同ク、又ハ上部ニアリテハ稍長シ。二種ノ果實ハ裂片ノ間ニ立チ、柄ヲ有ス。四

分胞子托ハ俵狀ニシテ短柄ヲ有ス。囊果ハ扁キ球狀ヲナシ又ハ腎臟形ヲナシ、頂部ニ溝ノ如キ果孔ヲ開ク。

產地、深所ニ産ス。伊勢、志摩、相模、上總、常陸、磐城、果實一夏季。

體ハ單獨又ハ數個ノ廣キ圓キ吸盤狀付着器 (5-8 mm. 廣シ)ヲ以テ直立シ、殆ド基部ヨリ夥シク分枝ス。分枝法ハ二縱列ニシテ、高サ 15-20 cm. 又ハ以上ニ達ス。枝ハ互生ニシテ、不規則ニ複羽狀ヲナシ、長短混在シ、廣開シ、腋銳角ナリ。體ノ下部並ニ長キ枝ノ下部ハ老成シタルモノニアリテハ、縁邊ノ齒狀裂片ノ脱落スルガ爲ニ稍圓柱狀ヲナス；然レドモ他ノ部ハ櫛齒狀ノ羽狀裂片ヲ有ス；裂片ハ細長クシテ基部稍廣ク或ハ稍三角狀ヲナシ扁平ナリ；而シテ多クハ廣開シ、互生シ、通常體ノ線狀部即チ背軸ノ幅ヨリ稍長シ。枝ノ上部ヨリ出ル裂片ハ内方ニ屈曲シ、背軸ノ幅ヨリ長ケレドモ、凡テ枝ノ下部ニアルモノハ其幅ヨリ短クシテ、三角形ヲナシ、廣開シ、恰モ背軸ニ鋸齒ヲ存スルモノ、如キ觀ヲ呈ス。長キ裂片ハ背軸ノ幅ヨリハ凡ソ其 $\frac{1}{3}$ 程長シ。枝ハ稍隆起セル中肋ヲ存シ、翼部ハ枝ノ下部ヨリハ上部ノ方幅廣シ。

體ノ中心部ハ中軸ヲ存シ、中軸ハ太キ圓柱狀細胞ヲ以テ成ル。中軸ノ各細胞ノ中央ヨリ稍上部ノ處ヨリ四條ノ枝ヲ輪生ス。此等四條ノモノ、内、二條ハ短クシテ二條ハ長ク、其短カキモノハ體ノ兩面ニ向ヒテ出デ、其出ルヤ否ヤ不明トナル；是レ中軸ノ周圍ニ根絲細胞アリテ、密ニ中軸ヲ圍ム爲ニ、之ト區別スル能ハザルニ依ルナリ。他ノ二條ノ一ハ

裂片ノ頂端ニ達シ、一ハ二個ノ裂片ノ間ノ腋ニ達ス。此腋ニ達シタルモノハ枝トナリ、實ヲ有スル體ニアリテハ、之ヨリ成實枝ヲ生ズ。中軸ノ周圍ニハ縱走セルニ絲細胞ノ多少厚キ一層アリテ、叉狀ニ分岐シ、互ニ錯綜ス。此層ノ外部ハ厚キ中層ヨリ成リ、其内方ノ細胞ハ大ニシテ圓ク、外方ニ近ヅクニ從テ漸々小サク成リ、遂ニ皮層ヲ以テ蔽ハル。表面ニ近キ細胞中稍大ナルモノハ橙黃色ノ物質ヲ含ム。

體ノ成長ノ方法ハ頂生ニシテ、水平又ハ稍斜ニ關節セル大ナル頂細胞ヲ有ス。頂細胞ノ直下ノ細胞ハ順次分裂成長シテ互生セル且ツ内方ニ屈曲セル齒狀裂片トナリ、此裂片ハ又自個成長點細胞ノ分裂ニ依テ伸長ス。裂片ノ腋ヨリ、中性又ハ實ヲ有スベキ幼キ小枝ノ成長點細胞ヲ顯出ス。

囊果及ビ四分孢子托ハ齒狀裂片ノ腋ニ立チ、有柄ナリ。其全體ノ長サ(柄モ共ニ)ハ通常齒狀裂片ノ長サト同ジトス。四分孢子托ハ俵狀ニシテ、表面下ニ多數ノ窠ヲ存シ、此窠ノ内壁ハ、緩キ關節絲ヨリ成リ、其中ニ長キ棍棒狀又ハ長橢圓形ノ四分孢子囊ヲ着ク。四分孢子囊ハ環狀ニ分裂ス。

胎原細胞ハ詳ナラズ。囊果ハ單獨、又ハ往々二個一所ニ生ジ、成實枝ノ頂端ニ斜ニ付着シ、時トシテハ不完全ナル齒狀裂片ヲ有ス。囊果ノ形狀ハ不規則ニ圓クシテ多少腎臟形ヲナシ、體ノ表面ト同一ノ面ニ於テ輕ク壓セラル。各頂端ニ於テ、長キ軸ニ沿フテ走レル、多少人ノ口ヲ開キタル如キ、隙裂ノ如キ果孔ヲ開ク。仁ハ厚キ果皮ノ兩片ニ依テ側面ヨリ壓迫セラレ；胎座ハ屢々叉狀ニ分岐セル多數ノ孢子絲ヨリ成リテ密ニ束集ス。此等束集セル孢子絲ノ頂端ノ細胞ハ胎

座ノ彎曲セル表面ヲ形成シ、球狀又ハ長メナル胞子ヲナス。仁ハ多クハ單獨ナレドモ、又他ノ稍小ナル別離セル一ガ同一ノ囊果中ニ存スルコトアリ。或標品ニテハ、成實枝ハ不完全トナリ、變ジテ不規則ニ分枝セル小枝トナルコトアリ。此等異常發達ヲナセル小枝ハ齒狀裂片ヲ缺クヲ常トスレドモ、時トシテハ少シク之ヲ生ズルコトアリテ、時ニハ囊果スラ形成セラル、コトモアリ。

色ハ、新鮮ナル時ハ、濃紅色ヲナシ、永ク水ニ浸スカ又ハ空氣ニ曝ラス時ハ鮮紅色トナリ遂イデ橙黃色トナル。質ハ薄キ膜質ニシテ、太キ中肋及ビ莖ハ軟骨質トナル。乾燥スルトキハ體ハ紙ニ付着セズ。

本種, *Phacelocarpus japonicus* ハ亞屬 *Euctenodus* (Kg.) J. Ag. ニ屬シ, *Ph. Labillardieri* ノ近所ニ置カルベキモノナリトス。此二種ヲ此較スルトキハ、本種ハ後種ヨリ左ノ點ニ於テ異ナルヲ見ルベシ、即チ：體ノ小形ナルコト、薄クシテ軟キ膜質ナルコト、中肋ノ太サ少ナキコト、翼部ノ稍幅廣キコト、及ビ齒狀列片ノ短カキト、稍距リテ配置セルコト是ナリ。稍長キ齒狀列片ノ長サハ、上記セル如ク、背軸ノ幅ヨリ長キコト凡ソ其 $\frac{1}{3}$ ニシテ、能ク伸ビタルモノニ於テモ、其基部ハ *Ph. Labillardieri* ノ齒狀裂片ノ基部ニ於ケルヨリモ稍廣シ。終リニ、本種ノ齒狀裂片ハ後種ニ於ケルヨリモ稍離レテ存シ、且ツ尙ホ廣ク廣開ス。

體ノ翼部ノ幅廣キ點ヨリスレバ本種ハ *Phacelocarpus alatus* ニ類スレドモ、此種ノ兩種ノ果實ノ柄ハ齒狀裂片ヨリ變成スルヲ以テ異ナリトス。 *Ph. apodus* J. Ag. 及ビ *Ph. sessilis* Harv.

ハ本種ヨリモ遙ニ細クシテ錐狀ヲナセル齒狀裂片ヲ有スルヲ以テ異ナリトシ, *Ph. apodus* ハ更ニ瘤狀囊果ヲ有スルニ依テ異ナレリ. *Ph. epipolæus* Holm. ハ體ノ形狀及ビ齒狀裂片ノ配置ニ於テ本種ニ類スレドモ, 太リタル背軸ト外部ヨリハ見ルベカラザル中肋ヲ存スルコトト並ニ分枝法トニ於テ異ナレリトス.

第二十七圖版.

第一圖: 四分胞子托ヲ有スルきじのをノ體, $\frac{1}{1}$.

第二圖: 體ノ横斷面, 廓大.

第三圖: 體ノ表面ニ直角ニ切リタル體ノ縦斷面ニシテ, 中軸ヨリ二條ノ短キ枝ヲ生ズルヲ示ス, $\frac{220}{1}$.

第四圖: 體ノ表面ヨリ透視シタル縦斷面ニシテ, 中軸ヨリ二條ノ長キ枝ヲ生ズルヲ示ス, $\frac{14}{1}$.

第五圖: 體ノ成長端ヲ表面ヨリ見タルモノ, $\frac{390}{1}$.

第六圖: 四分胞子托ヲ有スル枝ノ一部, $\frac{10}{1}$.

第七圖: 四分胞子托ヲ表面ヨリ見タルモノ, $\frac{50}{1}$.

第八圖: 同上ノ横斷面, $\frac{50}{1}$.

第九圖: 同上ノ縦斷面, 廓大.

第十圖: 第九圖ノ一部, $\frac{220}{1}$.

第十一圖: 四分胞子囊ノ形成, $\frac{684}{1}$.

第十二圖: 成實枝ノ異常發育ヲナセルモノ, $\frac{7}{1}$.

第十三圖: 囊果ヲ有スル枝ノ一部, 廓大.

第十四圖: 囊果ヲ扁キ面ヨリ見タルモノ, $\frac{50}{1}$.

第十五及第十六圖：扁キ面ニ垂直ニ切リタル囊果ノ
縦斷面ニシテ、二個ノ仁ヲ有スルモノヲ示ス、 $\frac{50}{1}$ 。

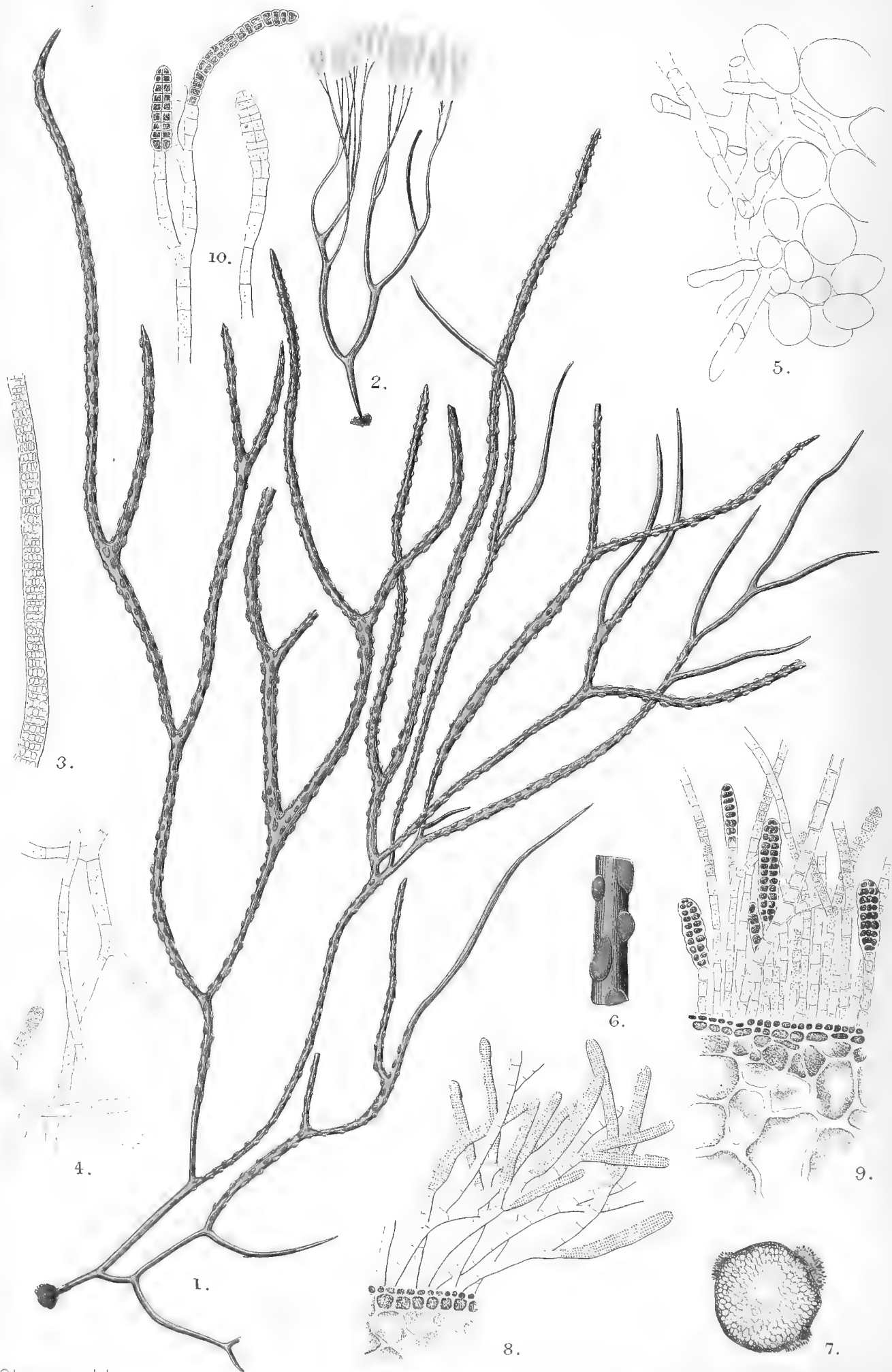
第十七圖：第十五圖ト同様ノ平面ニ於テ切リタル囊果
ノ縦斷面、 $\frac{85}{1}$ 。

第十八圖：胞子絲、 $\frac{390}{1}$ 。

11

1. The first part of the paper is devoted to a discussion of the various methods which have been proposed for the determination of the rate of reaction between a radical and a molecule. The second part is devoted to a discussion of the various methods which have been proposed for the determination of the rate of reaction between a radical and a molecule. The third part is devoted to a discussion of the various methods which have been proposed for the determination of the rate of reaction between a radical and a molecule.





K.Okamura del.

Cutleria cylindrica Okam. nov sp.

むちも新種

PLATE XXVIII.

Cutleria cylindrica sp. nov.

CUTLERIACEÆ.

Nom. Jap. *Muchi-mo*.

Diagn: Fronds of the sexual generation high, cylindrical, stipose at base, dichotomous, with patent axils, tapering to both extremities and filiform above; of radial structure, being composed axially of elongated and loosely set, filamentous cells, by the decay of which the frond becoming tubular afterwards. Sori of both sexes forming irregularly roundish, warty prominences, densely scattered around branches; female gametangia oblong and the male cylindrical. Plant of the asexual generation is not known at present.

Hab. On rocks between tide-marks. Ise, Shima, Sagami, Bōshū.—Gametangia in May.

Fronds arise solitary or in tuft from a common callous disc of diameter of a few millimeters. They are cylindrical and furnished below with a short stem. Lower portion of stem and surface of disc are stipose from the presence of buffy-coloured hairs. The hairs are monosiphonous and branched divaricately, being elongated by the division of terminal cells which are rich in yellowish-brown contents. Above the stem, frond is repeatedly forked, forks being nearer to each other in the lower part of frond, while in the middle and upper portion, they are more and more distant. Frond is, for the most part, 2–3 mm. thick in

diameter, gradually tapering to both extremities, and elongates above into slender segments. Segments are widely parted, making a gentle curve from origin, and are often loaded with irregularly inserted and similarly formed branches. The height of plant, when fully grown, attains 30–50 cm. in length.

Of the structure of frond, there are three layers. The axial layer consists of longitudinally running and loosely set, filamentous cells which are connected with those, forming the inner wall of the intermediate stratum. This axial tissue becomes destroyed as the plant advances in age, making the frond tubular. Outside of this, there is a thick intermediate layer which is composed of large, roundish-angular and almost hyaline cells. These become gradually smaller as it proceeds towards periphery, and finally pass into infra-cortical tissue. The latter is formed of smaller coloured cells and is covered by a layer of anticlinal epidermal cells which are often transversely divided into two. All the cells are united to each other by the formation of pit which appears to be similar as it is well known in cells of florideæ.

Mode of growth of frond is trichothallic, that is, the growing apices of branches dissolve into a tuft of penicillate hairs which are free from each other down to the base and greenish-olive in colour. These hairs consist of jointed cells which are here and there divided by longitudinal walls, and the articulations appear in surface-view to be composed of a few cells zonally arranged. By repeated division of the basal cells of hairs, new parts are added to frond, as it is well known to plants of this genus. Afterwards, they are dropped off, leaving the apices of fully grown branches slender and naked.

Sori of both sexes form, on different individuals, irregularly roundish, slightly elevated, warty prominences which are densely scattered around branches, except in the upper segments and

and lower part of frond. The female sori are slightly greenish-olive, while the male are whitish in colour. On making section through a sorus, we find many jointed hairs formed from the elongation of epidermal cells, which are found to be either simple or branched and of unequal lengths. They elongate by intercalary cell-divisions. The part of the fertile hair, which forms a gametangium, is at first transversely divided and then longitudinally, and by this way, cylindrical or oblong gametangium is formed. The latter is either formed on the apical portion or sides of fertile hairs. The female sporangium is longer and thicker and is of larger compartments than the male, and its content is densely greenish-olive, while that of the male is almost colourless. The pore formed on the side of each loculus, as it is clear from the empty gametangium, furnishes the exit for female gametes which I have not yet been able to observe. As to the asexual form of this plant—that is the *Aglaozonia* plant—is not known at present.

The colour is yellowish-olive when fresh, turning almost blackish when dried. The substance, when fresh, is rigid, cartilaginous and brittle; it much shrivels, and plant does not adhere to paper in drying.

A distinct species from the form and structure of frond. The present alga is the only species known of this genus in this country. From its general appearance, it makes us remind *Stilophora Lyngbyei* J. Ag., and it is somewhat interesting in morphological point of view.

In structure, the present alga differs somewhat from that of hither-known species of this genus, as it is constructed in *radial* symmetry instead of *bilateral*; and it has, in its axial layer, loosely set filamentous cells.

In form of frond, *Cutleria adspersa* (Roth) De Not., on the one hand, has flabellate, multilobed and *Zonaria*-like frond which shows tendency, in adult state, to pass into a form somewhat resembling to *Cut. multifida* (Sm.) Grev. as it is shown in Zanardini's Icon. Phyc. Meditr.-Adr., Tav. LVII. *Cutleria pacifica* Grun., on the other hand, has thin-membranaceous, linear, dichotomous and elongated frond, while *Cut. compressa* Kg. has compressed, coriaceous and dichotomous one. Now, *Cutleria cylindrica*, as its name indicates, has cylindrical frond, and may perhaps be allied with *Cut. pacifica* or *compressa*. By the discovery of the present plant, the genus *Cutleria* comprises, in regard to the form of frond, three variations, namely, fan-shaped, compressed and cylindrical, and also, in respect to the structure, three diversities, i. e., dorso-ventral, bilateral and radial.

Plate XXVIII. **Fig. 1:** *Cutleria cylindrica* Okam. sp. nov. bearing female gametangia, $\frac{1}{1}$.—**Fig. 2:** young plant, $\frac{1}{1}$.—**Fig. 3:** portion of terminal trichome, $\frac{220}{1}$.—**Fig. 4:** pieces of basal hairs, showing mode of ramification and terminal growth, $\frac{220}{1}$.—**Fig. 5:** portion of the cross-section of frond, showing the axial filamentous cells and the innermost layer of the intermediate stratum, $\frac{222}{1}$.—**Fig. 6:** portion of frond bearing female sori, slightly magd.—**Fig. 7:** cross-section of frond bearing female sori, showing the degeneration of axial layer, $\frac{12}{1}$.—**Fig. 8:** portion of the male sorus, $\frac{220}{1}$.—**Fig. 9:** portion of the female sorus, $\frac{220}{1}$.—**Fig. 10:** female gametangia, full and empty, $\frac{220}{1}$.

第二十八圖版

Cutleria Grev.

むちも屬

むちも科

性質、體ノ下部ハ褐色ノ毛狀體ヲ存シ、二形ヲ有ス、則チガメート囊ヲ生ズルモノハ直立シ、游走子囊ヲ生ズルモノハ匍臥ス。直立スル體ハ扁平、扁壓又ハ圓柱狀ニシテ、扇狀ヲナシ又ハ分裂シ或ハ不規則ニ裂ケ或ハ叉狀ニ分岐ス。造構ハ直立スル體ニテハ左右相稱或ハ輻狀相稱ニ組成セラレ、三層ヨリ成ル：外層ハ密ニ色素ヲ含メル一層ノ小細胞ヨリ成リ；中層ハ稍大ナル細胞ヨリ成リ、此細胞ハ色素體ヲ有スルコト僅少ナリ；内層ハ體ノ成長スル方向ニ伸ビタル稍無色ノ細胞ヨリ成ル。匍臥スル體（即チ *Aglaozonia* 時期ノモノ）ニアリテハ腹背ノ性質ヲ存ス：其上層ハ二三層ノ細胞ヨリ成リ、小ニシテ密ニ色素體ヲ有ス；其下層ハ稍大ナル無色ノ細胞數層ヨリ成リ、細胞列ヨリ成レル糸狀根ヲ出シテ他物ニ付着ス。體ノ成長スル方法ハ直立スルモノニアリテハ頂毛成長ヲナシ、匍臥スルモノニアリテハ縁邊ノ成長ヲナス。有性生殖器ハ體ノ兩面又ハ周圍ニ斑點狀ノ群ヲナシテ生ジ、畧ボ横列ニ配置スルコトアリ、又不規則ナルコトアリ、雌雄異株ニ生ズ。**ガメート囊**ハ縦横ノ隔膜ニ依リテ區劃セラレタル圓柱狀ノ體ヲナシ、雌性囊ハ雄性囊ヨリ太クシテ且ツ大ナル室ヲナス；而シテ雌ハ各室ニ一個、雄ハ各室ニ二個ノガメ

ートヲ生ズ。各室ハ側面ニ一個ノ孔ヲ開キテガメートヲ脱出セシム。ガメート囊ハ單條又ハ分岐セル關節絲ノ側面又ハ頂部ニ形成セラル。游走子囊ハ單室ニシテ、圓柱—棍棒狀ヲナシ、體ノ表面ニ坐シ、密ニ相集リテ斑點狀ヲナス。各子囊ヨリ 4-6 個ノ游走子ヲ生ズ。パラフヒシスハ之ヲ缺ク。

溫暖ノ海ニ産スル海藻ニシテ、四五種アリ；本邦今左ノ一新種ヲ加ヘタリ。此屬ノ植物ハ世代ノ交番ヲナスモノトシテ知ラレタリ。

Cutleria cylindrica sp. nov.

む ち も 新 種

Cutleria cylindrica Okam. 岡村, 日本藻類名彙 235 頁.

性質: **有性體**ハ高クシテ、基部毛茸ヲ存シ、圓柱狀、叉狀、廣開シ、腋圓ク、上部細クナリテ絲狀ヲナス；造構ハ放射狀ニシテ、髓部ハ錯綜セル絲ヨリ成リ、大ナル圓形—多角形ノ細胞ヲ以テ厚ク蔽ハレ、外部ハ僅層ノ皮層細胞ヲ以テ蔽ハル；老成スルトキハ髓部ノ組織ノ腐朽スルガ爲ニ中空トナル。雌雄ガメート囊ノ群ハ不規則ナル圓形ノ瘤狀ヲナシ、密ニ枝ノ全面ニ散在シ、各長キ圓柱狀ヲナス。

產地. 潮線間ノ岩石ニ生ジ、稍靜穩ノ場所ヲ好ム。伊勢、志摩、相模、安房。子囊一五月。

體ハ共同ノ小盤狀根ヲ以テ叢生シ、或ハ單獨ニ直立ス而シテ根ノ直徑ハ數 mm. ヲ超ヘズ。體ハ圓柱狀ニシテ、下部

短カキ細キ莖ヲナス。莖ノ下部及ビ根ノ表面ハ褐色ノ毛茸ヲ存スルガ爲ニ平坦ナラズ。此毛ハ一列ノ細胞ヨリ成リ、不規則ニ分岐シ、頂端ノ細胞ノ分裂ニヨリテ伸長ス；其細胞ハ黄褐色ノ内容ヲ以テ充ツ。莖ノ上部ハ屢々分叉シ、叉枝ハ下部ニアリテハ互ニ相接近シ、中央部及ビ上部ニ進ムニ從テ、漸々相距ル。體ノ大部分ハ直徑 2-3 mm. ノ太サヲ有スレドモ、漸次兩端ニ細リ、先端ハ鞭狀ニ伸ブ。各部ハ其分岐點ヨリ緩ヤカナル曲線ヲ畫キテ廣開シ、往々不定ノ場所ヨリ同様ノ形セル枝ヲ生ズ。體ハ充分ニ成長スルトキハ 30-50 cm. ニ達ス。

體ノ造構ハ三層ヨリ成ル；髓層ハ縱走シテ緩ク分枝セル絲狀細胞ヨリ成リ、中層ノ内側ヲ形成セル細胞ト連絡ス。此層ハ、後チ體ノ老成スルトキハ腐朽シテ中空トナル。此層ノ外部ニハ厚キ中層アリテ、中層ハ大ニシテ圓形—多角形ヲナセル殆ド無色ナル細胞ヨリ成ル。此層ノ細胞ハ外部ニ進ムニ從テ漸々小サクナリ、遂ニ皮下層トナル。皮下層ハ有色ナル小細胞ヨリ成リ一層ノ上皮細胞ヲ以テ蔽ハル；上皮細胞ハ往々二個ニ分裂スルモノアリ。總テ細胞ノ相互ニ連續スル部分ハ紅藻類ニ見ルト同様ナル連絡點ヲ存ス。

體ノ成長スル方法ハ頂毛成長ニシテ、枝ノ頂端ハ筆頭ノ如ク叢生セル毛ヲ有シ、此毛ハ各其基部マデ相離レ、綠褐色ヲナス。而シテ連節セル細胞ヨリ成リ所々縱ノ隔膜ニテ分タル、ヲ以テ、表面ヨリ見ルトキハ少許ノ細胞ガ横列セル如キ觀ヲ呈ス。此毛ノ基部ノ細胞ノ分裂ニヨリテ、新組織ヲ莖ニ付加スルコトハ此屬ノ植物ニ於テ能ク知ラル、所ナ

リ。後チ毛ハ墜落シ、充分伸長シタル枝ノ頂端ハ裸出シテ細シ。

雌雄ガメート囊ノ群ハ異株ニ生ジ、不規則ノ圓形ナル稍隆起セル瘤狀ヲナシテ、枝ノ周圍ニ密ニ散在ス、但上部ノ細キ枝ト體ノ下部トニハ之ヲ生ゼズ。雌性群ハ綠褐色ヲナセドモ、雄性群ハ無色ナリ。今此等ノ群ヲ通ジテ斷面ヲ造ルトキハ、多數ノ關節シタル毛狀體アルヲ見ルベシ；此毛ハ表皮細胞ノ伸長シタル爲ニ生ジ、單條ナルアリ又分枝セルアリテ長短不同ナリ；而シテ介生的分裂ニヨリテ伸長ス。毛ノガメート囊トナルベキ部分ハ始メ横ニ分裂シ、後縦ニ分レ、斯クシテ圓柱狀又ハ長橢圓狀ノガメート囊ヲ形成ス。ガメート囊ハ毛ノ頂部ニ或ハ側部ニ生ズ。雌性子囊ハ雄性子囊ヨリ太ク且ツ室モ大ニシテ、其内容物ハ綠褐色ヲナス、然ルニ雄性子囊ノ内容物ハ殆ド無色ナリ。各室ノ側面ニ存スル小孔ハ、ガメートノ脫出シタル空虚ノ子囊ニ於テ明ナル如ク、ガメートノ脫出スルニ備フル所ナリ、然レドモ、余ハ未ダ其脫出スルヲ認ルノ機會ヲ得ズ。此植物ノ無性代ノモノ、即チ *Aglaozonia* 體ハ今詳ナラズ。

色ハ、新鮮ノトキハ、淡黃褐色ナレドモ、乾燥スルトキハ殆ド黑色トナル。質ハ、新鮮ノトキハ、硬ク、軟骨質ニシテ脆シ；乾燥スルトキハ著シク萎縮シ、標品ハ紙ニ付着セズ。

體ノ形狀及ビ造構ノ點ヨリ明ニ新種ナルコトヲ認ム。本植物ハ本邦ニ於テ發見セラレタル此屬ハ唯一ノモノナリ。其一般ノ様子ニテハ *Stilophora Lyngbyei* J. Ag. ヲ想起セシム；而シテ本植物ハ上記セル性質ニ依リ、形態上ノ點ヨリ稍趣味アルヲ覺ユ。

造構ヲ以テ見ルニ、本種ハ此屬ノ在來ノ種類トハ異ナリテ、左右相稱ノ造構ヲ有スルコトナク、輻狀相稱ニ組成セラレ、且ツ、髓部ニ緩ク分枝セル糸狀細胞ヲ有ス。

體ノ形狀ヲ以テ見ルニ、一方ニハ、*Cutleria adspersa* ノ如ク扇狀ヲナシテ *Zonaria* ノ如キ體ヲ有スルモノアリ、而シテ此植物ハ老成スルニ至レバ稍 *Cut. multifida* ニ類似スル如キ形狀ヲナスノ傾向ヲ有スルコトハ *Zanardini* 氏ノ *Icon. Phyc. Medit.-Adr. Tav. LVII.* ニ圖セルガ如シ。又一方ニハ、*Cutleria pacifica* *Grun.* ハ薄キ膜狀ニシテ、線狀、叉狀ヲナシ、且ツ長キ體ヲ有シ；*Cut. compressa* *Kg.* ハ扁壓、叉狀ニシテ、硬キ體ヲ有ス。今 *Cut. cylindrica* ハ其種名ニテ知ラル、如ク、圓柱狀ノ體ヲ有シ、恐ラクハ *Cut. pacifica* 又ハ *Cut. compressa* ト親縁ヲ有スルナルベシ。本種ノ發見セラレタルニ依リ、*Cutleria* 屬ハ、形狀ニ就テ、三種ヲ有ス；即チ扇狀、扁壓及ビ圓柱狀是ナリ。而シテ、造構ニ就テモ、亦三種アリ；即チ、腹背、左右及ビ輻狀造構之ナリトス。

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第二十八圖版

第一圖：むちもノ雌性複子嚢ヲ有スルモノ；自然大。

第二圖：同上ノ幼植物；自然大。

第三圖：頂端ノ毛狀體ノ一部； $\frac{220}{1}$ 。

第四圖：體ノ基部ノ毛ノ分枝法及ビ其頂端ヨリ伸長スルヲ示ス； $\frac{220}{1}$ 。

第五圖：體ノ横斷面ノ一部ニシテ、軸部ノ絲狀細胞ト、中層ノ最内部ノ層トヲ示ス； $\frac{220}{1}$ 。

第六圖：雌性子嚢群ノ一部；郭大。

第七圖：雌性子嚢群ヲ有スル體ノ横斷面ニシテ、軸部ノ組織ノ破壊セルヲ示ス； $\frac{10}{1}$ 。

第八圖：雄性子嚢群ノ一部； $\frac{220}{1}$ 。

第九圖：雌性子嚢群ノ一部； $\frac{220}{1}$ 。

第十圖：雌性子嚢ノ充實セルモノト空虛ナルモノ； $\frac{220}{1}$ 。





K.Okamura del.

Cladophora Wrightiana Harv.

ちやしほぐさ

PLATE XXIX.

Cladophora Wrightiana Harv.

CLADOPHORACEÆ.

Nom. Jap. *Cha-shiwo-gusa*.

Cladophora Wrightiana Harv. Char. New Alg. in Proceed. Amer. Acad., Vol. IV, 1859, p. 333, no. 43; Dickie Notes on Alg. in Journ. Linn. Soc. Bot., Vol. XV, 1876, p. 451; De Toni Phyc. Jap. (1895) p. 60; Kjellm. Marina Chlorophyc. fr. Japan p. 26; Okam. Alg. Jap. Exsic., Fasc. I, no. 46.

Fronds are densely tufted, erect and filiform, 25-40 cm. high, about 0.5-0.7 mm. thick. The basal articulation is more or less elongated into cylindrical stem (often 4 cm. long, 0.7-0.8 mm. thick), which is annulately constricted at the base for a short distance. From lower extremities of joints extracuticular, decurrent root-fibres are emitted, which remain very short in upper joints but becoming somewhat longer in lower portion of frond. And those fibres emitted from lower portion of stem, branch in an irregular manner and are septate at various distances. Branches are produced from nodes in an alternate manner and often 3-5 (mostly three upwards) arise from the same node. They are fastigiate and terminate in blunt apices. Lengths of articulations are longer in lower branches and shorter in upper ramuli. They vary in length from three to eleven times or more as broad. Substance is stiff when fresh, cells being provided with thick, lamellated walls, and the plant does not adhere to paper in drying. Colour is deep bluish-green, fading to reddish brown when dried and then presents glossy appearance.

Hab. On rocks, shells, &c, extending from low tide to the depth of 15-18 fathoms. Cape Nomo (Prov. Hizen, Kjellm.), Chikuzen, Hiuga, Ōsima Harbour (Mosely), Shima, Shimoda (Prov. Izu), Bōshū, Kāzusa.

In form and colour after drying, the present plant much resembles *Apjohnia rugulosa* G. Murr.; but it differs from that plant in its having septa at nodes.

Plate XXIV. **Fig. 1:** *Cladophora Wrightiana* Harv. in nat. state and size.—**Fig. 2, 3, and 4:** portions of a branch, showing the terminal, the middle and the lower, and the mode of branching, $\frac{10}{1}$, $\frac{15}{1}$, and $\frac{10}{1}$, respectively.—**Fig. 5:** basal portion of stem, showing annulate constrictions and root-fibres, $\frac{30}{1}$.

第二十九圖版

Cladophora Kützinger.

しほぐさ屬

しほぐさ科

體ハ一般ニ直立シ又ハ球狀塊ヲナシ、通常長キ細胞ノ列ヨリ成リテ分枝シ、主トシテ頂端ノ細胞ノ分裂ニヨリテ伸長ス；老成スルトキハ水面ニ浮游スルコトアリ或ハ附着器ヲ以テ他物ニ固着ス；附着器ハ下部ノ細胞ノキューチクル層内ニ或ハ此層ノ外ニ一條又ハ數條ノ根ヲ出シ、此根相集リテ健成根ヲ形成ス。葉綠體ハ多數ノビレノイドヲ有シ、一個ノ内壁ニ沿ヒテ往々穿孔セル盤狀面ヲナシ、又ハ細胞ノ内部ニ網狀ヲナシ、或ハ多數ノ角張リタル小サキ盤ヲナシテ内壁ニ附着ス。有性生殖ハ只一種 (*Cladophora sericea*) ニ於テ知ラレタルノミニシテ、雌雄ノ別ナキガメートノ接合ニヨル、游走子ハ四條又ハ二條(二條ノモノハ單性生殖ヲナスガメートナルカ?)ノ纖毛ヲ有シ一個ノ紅色ノ眼點ヲ有ス。アキチート及アプラノ胞子ハ缺ク、然レドモ或種ニアリテハ一細胞ハ秋ニ於テ膨大シ、内容ヲ以テ充滿シ、地ニ落ち、越年ス；而シテ新發生期ノ始メニ當リテハ此越冬シタル體ノ細胞ヨリ新ニ枝條ヲ發出ス。ジゴートハ直ニ萌發シ、直接ニ新シキ體トナル

地球上各部ノ淡水、淡鹹水及ビ鹹水ニ生ズ。2-300種知ラ

レタルモノアリ、然レドモ其内正シキ種ト認ムベキモノハ詳ナラズ。今日ニテハ三亞屬ニ分タル。

Cladophora Wrightiana Harv.

ちやしほぐさ 新稱.

Cladophora Wrightiana Harv. Cha. New Alg. in Proceed. Amer. Acad., Vol. IV, 1859, p. 333, no. 43; Dickie Notes on Alg. in Journ. Linn. Soc., Bot., Vol. XV, 1876, p. 451; De Toni Phyc. Jap. (1895) p. 60; Kjellm. Marina Chlorophyc. fr. Japan p. 26; 岡村, 日本海藻標品, 第一帙, 第四十六; 岡村, 日本藻類名彙 188 頁.

體ハ密ニ叢生シ、直立シ、絲狀ニシテ 25-40 cm. 高ク、凡ソ 0.5-0.7 mm. 太シ。基部ノ關節ハ多少長クシテ圓柱狀ノ莖ヲナシ、(往々 4 cm. 長ク、0.7-0.8 mm. 太シ)、莖ノ下部ハ少距離ノ間環狀ニクビレル。枝ノ節々ヨリ短キ根ヲ出シテ節ヲ強建ニス、而シテ莖ノ下部ヨリ絲狀根ヲ發出シ、根ハ不規則ニ分枝シ、所々ニ隔膜ヲ存ス。枝ハ節ヨリ互生シ、往々 3-5 (上部ハ多ク三出) 同一節ヨリ生ズ。枝ハ直上シ、鈍頭ニ終ル。關節ノ長サハ下部ノ枝ニテハ長ク、上部ノ小枝ニテハ短シ; 其長サハ幅ノ 3-11 倍ナリ。質ハ新鮮ノトキハ硬ク、細胞ハ重層セル厚キ細胞膜ヲ有シ、乾燥スルトキハ紙ニ附着セズ。色ハ穠青綠色ニシテ乾燥スルトキハ褐色トナリ、光澤ヲ存ス。

產地。岩石、貝殼等ノ上ニ生ジ、低潮線ヨリ 15-18 尋ノ深

サニ達ス。野母崎(肥前, Kjellm.), 筑前, 日向, 大島港 (Moseley), 志摩, 下田 (伊豆), 安房, 上總。

體ノ形狀及ビ乾燥シタル後ノ色ニ於テハ本種ハ *Apjohnia rugulosa* G. Murr. ニ類スレドモ, 節部ニ隔膜ヲ存スルヲ以テ之ト異ナリトス。

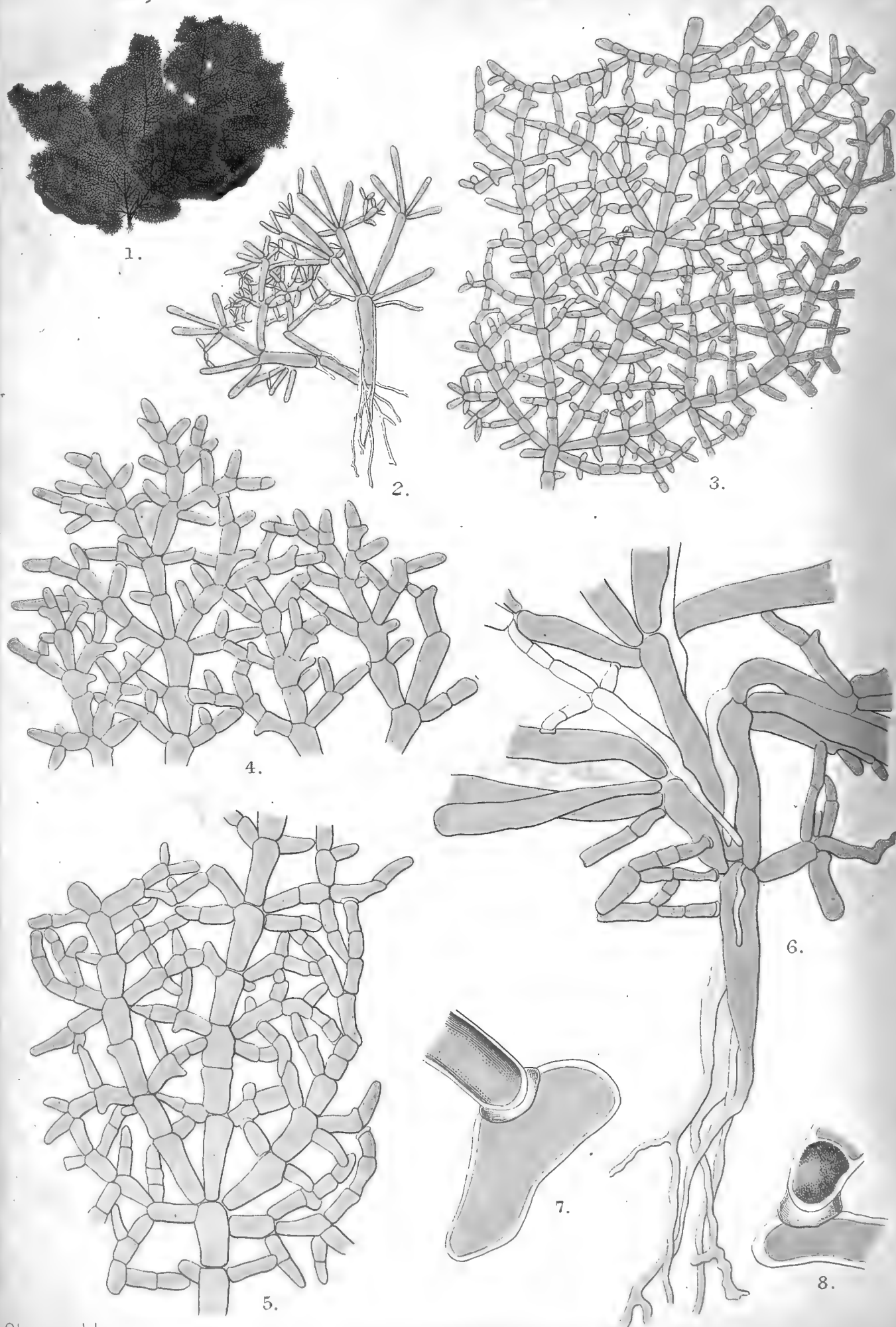
第二十九圖版

第一圖: ちやしほぐさ; 自然形及自然大。

第二, 三, 及 四圖: 一ノ枝ノ上部, 中部及ビ下部ヲ示シ, 枝ノ出方ヲ示ス; $\frac{10}{1}$, $\frac{15}{1}$ 及ビ $\frac{10}{1}$ 。

第五圖: 莖ノ下部ニシテ環狀ノクビレ及ビ根ヲ示ス; $\frac{30}{1}$ 。





K. Okamura del.

Rhipidiphyllon reticulatum (Asken.) Heydr.

あみりょう

PLATE XXX.

Rhipidiphyllon reticulatum (Ask.) Heydr.

VALONIACEÆ.

Nom. Jap. *Ani-moyō*.

Rhipidiphyllon reticulatum (Askenasy) Heydrich Beitr. zur Kenntniss der Algenflora von Ost-Asien p. 281, Taf. XV. Fig. 1. (Hedwigia Bd. XXXIII. 1894).—*Anadyomene reticulata* Askenasy *Forschungsreise S. M. S. „Gazelle.“ Bot. IV. Th. Algen. pag. 5*; De Toni Syll. Alg. Vol. I. p. 731.

Plants form a rosette-like tuft composing of fan-shaped, radially folded or undulated, leaf-like nets, 3–4 cm. in extent. Net is constructed of repeatedly palmate and radially arranged, cylindrical cells which form the main veins of leaf. From almost every node of these veins, arise smaller cells which loosely anastomose to each other by means of the formation of terminal tenacula, forming angular meshes between. The size of meshes of the upper portion of frond is smaller than the lower, and it gradually diminishes as it proceeds upwards. Intercalary division of cells is often perceptible in those of main veins. Lower cells of the main veins are much elongated, their lengths being 5–6 times or more, while the upper ones are 2–3 times long as broad. Lengths of cells of the veinlets (if we may call those cells which arise from the main veins) are mostly subequal to or twice as broad. Tenacula have no such crenulated structure as it is usual to *Dictyosphaeria*, *Boodlea*, *Valonia* etc., but, here, the terminal wall of cells which are brought into contact with

another part of frond, only slightly thickens, expanding and forming a circular or slightly crenate, cohesive disc, and no septation occurs at a short distance from the apex, as it is also the case with other typical tenaculum. Mode of growth of frond is acropetal and the margin is formed by free ends of ramuli. The number of rays of the main veins is 3-5 or more. Cells in the basal portion of frond emit root-fibres which running together downwards form a stem-like process.

Hab. On rocks between tide-marks, often in tide-pools. Susaki (Prov. Tosa, Makino), Misaki (Prov. Sagami, Yendo), Tateyama (Prov. Bōshū), Ogasawarajima (Yatabe); eastern coast of Taiwan (Warb., Heydrich).

Hitherto-known: Isl. Dirk Harteg in Western Australia.

The genus *Rhipidiphyllon* has been established by Heydrich, based on *Anadyomene reticulatum* Asken., who had done a careful study of the present plant and *Anadyomene*, especially *Anadyomene Wrightii* Harv. and thoroughly discussed about the difference between these two genera. Here, I refer our plant to the present genus according to Heydrich's view. On making this reference, I only resorted to his work cited above, and therefore, I think it better to express, in this place, the reason why I have referred our plant to this genus. Our plant may be identical with his. It has main veins and veinlets as illustrated by that author in his Taf. XV. fig. 1. Again, tenaculum which has been described above may be identical with his so-called tenaculum, as it appears from his illustration and description given in l. c. p. 282, "Nach denselben Autoren.....solche vor, die nur ausgebuchtet sind, Solche Tenaculæ besitzt Rhipidiphyllon." Murray and Boodle state that the similar ad-

hering organ occurs in *Microdictyon Velleyanum* Decne. = *M. umbilicatum* Zanard.; and also, I myself ascertained its existence in *Microdictyon umbilicatum* Zanard. collected at Gulf of Naples and sent from late Prof. Fr. Schmitz. Now, by putting aside the common character, i. e. possession of tenaculum, from *Rhipidiphyllon* and *Microdictyon*, the former differs simply in its having two kinds of cells, viz. those forming the main veins and veinlets, as well as non-umbilicated habit. I am really in accordance with Heydrich's view in so far as the difference of *Rhipidiphyllon* from *Anadyomene* is concerned, but, it seems to me rather weak to separate the former genus from *Microdictyon*, simply by the differences just spoken of. If existence of the present genus be allowed, it should stand between *Microdictyon* and *Anadyomene*, and may be said to be more allied to the former than to the latter. At any rate, here I have described the plant in question provisionally under the genus *Rhipidiphyllon*.

Plate XXX. Fig. 1: frond of *Rhipidiphyllon reticulatum* (Asken.) Heydr., $\frac{1}{1}$.—Fig. 2: lower portions of two fronds uniting to each other by ramuli, $\frac{14}{1}$.—Fig. 3: middle portion of the frond, $\frac{14}{1}$.—Fig. 4: upper margin of the frond showing free ends of ramuli and tenacula, $\frac{50}{1}$.—Fig. 5: lateral margin of frond, showing the main veins and tenacula, $\frac{50}{1}$.—Fig. 6: basal portion of frond, $\frac{50}{1}$.—Fig. 7 and 8: adhesion of cells by tenaculum, $\frac{220}{1}$.

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第三十圖版

Rhipidiphyllon Heydrich.

あみもよう屬

バロニア科

體ハ葉狀、扇狀ニシテ、屢々掌狀ニ分枝シ、放射狀ニ列セル細胞ノ一層ヨリ組成セラレ、少數ノテナキュラヲ以テ緩ク結合シ、依テ以テ網ヲナス、其長キ網目ハ基部ノ方ニ大ニシテ、縁邊ノ方ニ小ナリ。體ノ成長ノ方法ハ下部先長ナリ。脈間細胞ハ欠ク。

此屬ハ *Anadyomene* 屬ヨリ分タレタルモノニシテ、元ト西部オーストラリアニ知ラレタリ。

Rhipidiphyllon reticulatum (Asken.) Heydr.

あみもよう 新稱

Rhipidiphyllon reticulatum (Asken.) Heydrich Beitz. z. Kenntniss der Algenflora von Ost-Asien p. 281. Taf. XV. fig. I. (Hedwigia Bd. XXXIII, 1894); 岡村, 日本藻類名彙 193 頁.—*Anadyomene reticulata* Askenasy Forschungsreise S. M. S. "Gazelle" Bot. IV. Th. Algen. p. 5; De Toni Syll. Alg. Vol. I, p. 371.

體ハ花形ノ叢ヲナシ、扇狀ニシテ放射狀ニ縮皺セル或ハ波狀ヲナセル葉狀ノ網ヲナシ、3-4 cm. ノ大サヲ有ス。網ハ屢々掌狀ニシテ、放射狀ニ配置セル圓柱狀細胞ヨリ成リ、此

等細胞ハ葉ノ主脈ヲ形成ス。此等主脈ノ各節ヨリ小サキ細胞ヲ生ジ、此等ノ細胞ハ其頂端ニテナキュラヲ形成シテ互ニ錯綜シ、其間ニ角形ノ網目ヲナス。體ノ上部ノ網目ノ大サハ下部ノモノヨリ小ニシテ、漸次上方ニ進ムニ從テ小形トナル。細胞ノ介生分裂ハ往々主脈細胞ニ於テ見ルベシ。主脈ノ下部ノ細胞ハ長クシテ、其長サハ幅ノ 5-6 倍乃至以上ニ達シ、上部ノモノハ其 2-3 倍ナリ。小脈(若シ主脈ヨリ生ズル細胞ヲ斯ク稱スルヲ得バ)ノ細胞ノ長サハ多クハ幅ト殆ド同長又ハ二倍長シ。テナキュラハ通常、*Dictyosphaeria*, *Boodlea*, *Valonia* 等ニ見ル如キ造構ヲ存セズ; 然レドモ此植物ニアリテハ、他ノ部分ト接觸セル細胞ノ頂端ノ膜ハ只僅ニ厚クナリ、開張シ、圓形又ハ稍波狀ノ縁邊ヲ有スル吸盤ヲナシ、規範的テナキュラニ於ケル如ク頂端ヨリ少距離ニ隔膜ヲ生ズルコトナシ。體ノ成長ノ方法ハ下部先長ニシテ、縁邊ハ游離セル小枝ヲ以テ成ル。主脈ヲナセル細胞ノ數ハ 3-5 又ハ以上ナリ。體ノ下部ノ細胞ハ根ヲ生ジ、此根ハ多數相集リテ下方ニ走り、莖ノ如キ部分ヲナス。

產地。潮線間ノ岩石ニ生ジ、往々潮溜ニ生ズ。須崎(土佐、牧野氏)、三崎(相模、遠藤氏)、館山(安房)、小笠原島(矢田部氏)、臺灣東岸(Warburg, Heydrich)。

既知產地。西部 オーストラリアノ ジルクハルテグ。

本屬ハ *Anadyomene reticulatum* Asken. ヲ基礎トシテ、Heydrich 氏ノ創設セルモノニシテ、氏ハ本種ト *Anadyomene* 屬トノ仔細ナル研究ヲナシ、殊ニ *Anadyomene Wrightii* Harv. ヲ精査シ、

兩屬ノ差異ニ就テ充分ニ論ゼリ。今、予ハ氏ノ說ニ從テ本種ヲ本屬ニ配ス。此ヲナスニ當リ、予ハ唯氏ノ研究報告ニ依レルノミナレバ、如何ナル論據ヨリ予ガ此植物ヲ本屬ニ配シタルカヲ記スコトヲ至當ト思惟ス。本植物ハ必ズ氏ノ研究シタルモノト同一ナルベシ。本植物ハ氏ノ書第十五圖版第一圖ニ於テ氏ノ圖說シタルモノト同様ノ主脈及ビ小脈ヲ有ス。又、上ニ記載シタルテナキュラハ氏ノ所謂テナキュラト同一ナルベシ；并ハ氏ノ圖及ビ同書 282 頁ニ舉ゲタル記載ニ依テ知ラル；即チ：“其兩著者ノ說ノ如ク……………唯接着シタル如キテナキュラ…………… Rhipidiphyllon ハ斯ノ如キテナキュラヲ有ス。” Murray 及ビ Boodle 氏ハ上記ノモノト同様ナルテナキュラガ Microdictyon Velleyanum Decne. = M. umbilicatum Zanard. ニ存スト記シ、予自身モ亦チーブルス灣ニテ採集シタル M. umbilicatum ノ標品ノ故 Prof. Fr. Schmitz ヨリ送ラレタルモノニ就テ同上ノモノアルヲ見タリ。今、同上ノ性質即チテナキュラヲ有スルコトヲ Rhipidiphyllon 及ビ Microdictyon ノ性質中ヨリ除クトキハ前屬ハ二種ノ細胞即チ主脈ヲナスモノト小脈ヲナスモノトアルコト並ニ臍狀ノ付着性ヲ有セザルコトニ依テ後屬ト區別スルノミ。予ハ本屬ト Anadyomene 屬トノ差ニ就テハ Heydrich 氏ノ說ヲ贊スレドモ、本屬ト Microdictyon 屬トヲ分ツニ、上ニ云ヘル如キ區別ノミヲ以テスルハ、少シク不充分ナルヤノ感ヲ有ス。若シ、本屬ニシテ果シテ成立スルモノトスレバ、其ハ Microdictyon ト Anadyomene トノ間ニ立タザルベカラザルモノニシテ、後屬ト關係スルヨリハ寧ロ前屬ト親密ナル關係ヲ有スルモノナリト云ハサルベカラズ。兎ニ角、予ハ茲ニ假ニ本植物ヲ本屬ニ編入スルモノナリ。

第三十圖版

第一圖：あみもようノ體； $\frac{1}{1}$.

第二圖：小枝ヲ以テ互ニ癒合セル二個體ノ下部； $\frac{14}{1}$.

第三圖：體ノ中央部； $\frac{14}{1}$.

第四圖：體ノ上部ノ縁邊ニシテ小枝ノ游離セルモノ及
ビテナキュラヲ示ス； $\frac{50}{1}$.

第五圖：體ノ側部ノ縁邊ニシテ、主脈トテナキュラトヲ
示ス； $\frac{50}{1}$.

第六圖：體ノ下部； $\frac{50}{1}$.

第七及八圖：テナキュラヲ以テ二個細胞ノ結合スルモ
ノ； $\frac{220}{1}$.

學 語 解

健成根； Verstärkungsrhizinen： しほぐさ類ノ植物ノ下部ノ細胞ヨリ絲狀根ヲ出シ、此根ハ細胞ノ キューチクル 層ヲ貫通スルコトアリ或ハ細胞ノ外部ニ沿フテ下走スルコトアリテ相集リテ太キ強健ナル附着器ヲナスヲ云フ。

脈間細胞； Zwischen-Zellen： Anadyomene 屬ノ植物ノ主脈ノ間ヲ填充スル細胞ヲ云フ。

自第一冊至第五冊

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1. The first part of the report is devoted to a general description of the project and its objectives. It also includes a brief review of the literature on the subject.

2. The second part of the report describes the methodology used in the study. This includes a detailed description of the experimental design, the subjects, and the data collection procedures.

3. The third part of the report presents the results of the study. This includes a description of the data and a discussion of the findings.

4. The fourth part of the report discusses the implications of the findings and suggests directions for future research. It also includes a conclusion and a list of references.

5. The fifth part of the report is a summary of the entire study. It includes a brief overview of the project and its objectives, a description of the methodology, and a summary of the results and conclusions.

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